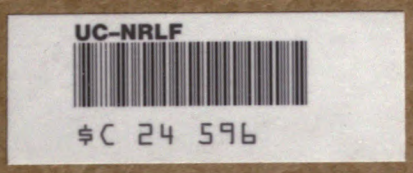

Oxford

Reduction of Bradley's observations for Aberration & Nutation.

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REDUCTION

OF THE

OBSERVATIONS MADE BY BRADLEY

AT

KEW AND WANSTED,

TO DETERMINE

THE QUANTITIES

OF

ABERRATION AND NUTATION.

BY DR. BUSCH,

ASSISTANT ASTRONOMER AT THE ROYAL OBSERVATORY OF KÖNIGSBERG.

Πάντων μέτρον ἄνθρωπος.

OXFORD,

AT THE UNIVERSITY PRESS.

MDCCCXXXVIII.

Astronomy

GIFT

REDUCTION

OF

BRADLEY'S OBSERVATIONS.

OF Bradley's original observations on Aberration and Nutation, those results only were known which Bradley himself published in the Philosophical Transactions (No. 406. vol. xxxv. p. 637. and No. 485. vol. xlv. p. 1). It was known, however, that these observations were very complete; and it was supposed that a strict and accurate discussion of them would give the values of the constants of Aberration and Nutation with greater exactness, than had hitherto been attained: for, though Bradley himself had gone through the investigation, yet on account of the more extended developement, which the theory of Nutation has undergone in later times, and the recently invented methods of deducing the most probable results from observations, there was reason to expect that we might now obtain much greater precision. A wish was therefore expressed (Bessel "Fundamenta Astronomiæ pro anno 1755," p. 122) that this series of observations, which had been lost sight of for nearly a century, might again be brought forward.

This wish has been gratified by professor Rigaud of Oxford, who had the good fortune to discover, among the books of the late professor Hornsby, a great many papers of Bradley, and among them the original observations for Aberration and Nutation. Mr. Rigaud thereupon imparted his discovery to astronomers in a work, containing much valuable information relating to Bradley, published at Oxford, in 1832, under the title of "Miscellaneous Works and Correspondence of the reverend James Bradley." This work contains not only the observations made by Bradley at Wansted, but those also which had been instituted at an earlier period by Molyneux at Kew, and continued there by Molyneux and Bradley conjointly. It contains likewise all the data requisite for a complete investigation of the constants of both elements, resulting from Bradley's observations.

The Royal Society of Sciences of Copenhagen were therefore induced to propose, in 1832, as the subject of their prize, "Observationes Bradleyanas, hoc anno Oxonii editas, ad calculos revocare, et in illarum vim inquirere." This prize question gave rise to the following inquiry.

The above-mentioned work of Mr. Rigaud contains an account drawn up by Molyneux himself of his instrument at Kew, from which I shall extract such

portions as are necessary for understanding the observations. The instrument was constructed for observing those stars only which passed very near the zenith, especially γ Draconis, which, besides possessing this advantage, is sufficiently brilliant to be visible in the day-time. This instrument, which Molyneux erected at his house at Kew, to repeat the earlier but unsuccessful experiments of Hooke, was a telescope, made by Graham, fixed in the direction of the zenith, and provided with means for measuring variations of zenith distances of stars[a]. To the object-end of the telescope there was attached a strong ring of brass, from which proceeded the pivots on which the instrument moved. Both pivots were of the same length and thickness, and their common axis passed through the centre of the object-glass. The supports for the pivots were fixed to the chimney wall of the house, which was built of brick, and 300 years old. The pivots were so contrived as to admit of being made perfectly horizontal, and of being moved in a direction perpendicular to the meridian. On the side of the telescope, to the west, hung the plummet, attached to a silver wire, which passed down the whole length of this side of the tube. On the telescope itself, at the part where the cross wires were inserted, there was screwed a small brass plate, bearing a black dot. The measurements depend on the supposition that, when the telescope has been so placed that the plumbline bisects the above-mentioned dot, its optical axis always preserves the same position with respect to the horizon. In the lower room, into which the eye end of the telescope passed, there was fastened to the same strong chimney wall a frame work, to which was attached a micrometer screw, by which the telescope could be moved in the direction of the meridian, and brought immediately upon the star: a weight suspended by a string, which passed over a pulley, always caused the telescope to bear against the screw. Prior to any observation, the telescope was so placed, by means of the micrometer screw, as to make the plumbline bisect the fixed dot; it was then moved, (also by the micrometer screw,) so that the star about to be observed might run along the wire stretched in the direction of its diurnal motion. The number of revolutions made by the micrometer screw, between the position in which the plumbline bisected the fixed point, and that in which the wire of the telescope was brought on the star, was the quantity to be observed. In order to convert the number of revolutions into seconds, it was ascertained that 42 revolutions of the screw were equal to an inch, and that the focal length of the object-glass was 24 ft. 3.15 in.: hence it follows, that the value of one revol. $= 16''.86785$. The head of the screw was divided into 17 equal parts, each one of which therefore $= \frac{16''.86785}{17} = 0''.992226$.

[a] For a description of this instrument, see "Miscellaneous Works and Correspondence of Bradley." p. xiv. and p. 96, note c: also Smith's Optics. [Editor.]

The examination of the position of the fixed dot with respect to the plumbline was generally repeated after the observation. To avoid parallax in placing the fixed dot under the plumbline, a small lens of 1.5 inch focal length was made to bear upon the plumbline.

It is clear from this description, that an alteration in the position of the brick work, on which the apparatus was fixed, could have no effect on the observation.

I will illustrate the method of observing by an example.—On the 1st of Jan. 1726, [N.S.] γ Draconis was observed. Before the observation, when the plumbline bisected the fixed dot, the index stood at 8.00; after the observation, at 8.33: the mean therefore = 8.17. After the telescope had been directed to the star, the index pointed to 11.75. The difference between the two readings = 3.58 divisions ($= 3''.55$) gives the distance of the star from that point of the heavens to which the axis of the telescope was directed when the fixed dot was bisected by the plumbline. In this manner every observation made at Kew is recorded.

The instrument was erected on the 7th of Dec. 1725, and the first observation was made on the 14th of Dec. Little reliance, however, is to be placed on the observations before the 29th of Dec.; for on that day the deviation of the star's path, through the telescope, from the horizontal wire was noticed for the first time, and care was taken afterwards, on that account, to bring the star upon the wire at the instant of culmination.

The series of observations commences then on the 1st of Jan. 1726, and ends on the 9th of Jan. 1728. During this period we find 83 observations of γ Draconis, 7 of α Persei, 12 of a small star in Auriga, and 5 of ζ Ursæ majoris.

Bradley not having succeeded during the observations at Kew in finding an explanation of the variation of the zenith distances of stars indicated by the observations, proceeded to determine the amount of those variations more accurately, by means of new observations directed to a greater number of stars. But as there were only a few stars, of sufficient brightness to be seen in the daytime, within the range of the instrument hitherto employed, he induced Graham to construct another, with which he might be able to observe all the stars comprehended in a zone of $12\frac{1}{2}^\circ$, having the zenith point for its centre. This instrument (the first specimen of a zenith sector) was not erected at Kew, but at Wansted.

Bradley's zenith sector had, for the most part, the same construction and apparatus as Molyneux's instrument; with this difference, however, that instead of the dot fixed on the telescope of the latter, in Bradley's instrument the divisions of an arc, attached to the telescope, graduated to every $5'$ as far $12\frac{1}{2}^\circ$, were used for the same purpose. The graduation was so contrived, that the readings of the arc corresponded nearly with the polar distance of the observed star. The

object-glass was 12 ft. 6.6 in. in focal length; and the eye-glass, always used, 2.2 in. The head of the micrometer screw was divided into 34 equal parts. To determine the value of one revolution of the screw in seconds of arc, Bradley measured with the zenith sector, on the 14th of Sept. 1747, the difference of the apparent zenith distances of the two stars β and γ Draconis, and found it 103 rev. 26.8 div. of the screw; at the same time, the same distance, according to the mural quadrant, was $= 58'.9''.5$: hence,

$$1 \text{ rev.} = 34 \text{ div.} = 33''.6213, \text{ and } 1 \text{ div.} = \frac{33''.6213}{34} = 0''.98886.$$

The first observation with this instrument was made on the 30th of Aug. 1727, on the star γ Draconis. Before the observation, the sector was so placed that the point answering to 38°. 25′ on the graduated arc exactly coincided with the plumb-line, and the index of the micrometer screw pointed to 18 rev. 31.0 div.: at the place of the star the index marked 21 rev. 1.6 div. So that the star was south of the point in the heavens, which corresponded to 38°. 25′ on the graduated arc, by the difference of the two readings, viz. 2 rev. 4.6 div. $= 1'.11''.79$. The observed polar distance of the star, therefore, inclusive of refraction and error of collimation, $= 38°.26'.11''.79$. In this way is given the result of every individual observation, made from the 30th of Aug. 1727 to the 14th of Sept. 1747. The following list contains the names of the stars observed, and the number of observations of each, made during this period.

Names of Stars.	Numb. of Observ.	Names of Stars.	Numb. of Observ.	Names of Stars.	Numb. of Observ.
λ Cassiopeæ	42	13 Lyncis	9	κ Cygni	17
α ——	108	ι Ursæ maj.	9	ι ——	5
π ——	8	f ——	10	θ ——	16
θ ——	18	θ ——	10	ψ ——	12
φ —— *	1	β ——	50	2 o ——	17
ξ Andromedæ	19	ψ ——	24	3 ω ——	12
4 Persei	4	χ ——	11	1 f ——	8
h ——	2	γ ——	54	g ——	4
65 Andromedæ	2	3 Canum Ven.	2	1 π ——	14
θ Persei	17	ε Ursæ maj.	129	μ Cephei	3
τ ——	58	21 Canum Ven.	9	ζ ——	18
γ ——	65	ζ Ursæ maj.	133	3 Lacertæ	6
α ——	79	g ——	17	3 Andromedæ	3
δ ——	44	η ——	166	7 ——	3
9 Aurigæ	21	β Draconis	247	8 ——	1
α ——	222	ι Herculis	70	τ Cassiopeæ	16
18 Camelopardi	36	ξ Draconis	61	σ ——	4
δ Aurigæ	36	γ ——	315	2 υ ——	10
35 Camelopardi	44	d ——	7	φ Persei	19
46 Aurigæ	23	c ——	9	β Cassiopeæ	107

* The same as 34 Cass. [EDITOR.]

Bradley, who had probably discovered the true explanation of the phenomena of Aberration and Nutation as early as the year 1728, and observed that the first comprehended an annual period, the latter a much longer one, (about 20 years,) might have perceived, that, although the Kew observations were sufficient for the determination of aberration, it was necessary to continue them in order to determine the constant of Nutation. A great many observations, however, were made at Wansted, which might serve for determining the amount of Aberration, and its effect on a greater number of stars than were observed at Kew. This is particularly the case at the beginning of the series. But when Bradley considered, as he had every right to do, that he had obtained the amount of Aberration with great precision, by the observations undertaken for that purpose, he contented himself, for the most part, with observations made at a particular time of the year. These he continued to the year 1747; thus extending them over a complete period of the Nutation. For this purpose he always left Oxford (where he filled the astronomical professorship) for Wansted; for it would have been injudicious to have taken the sector to Oxford, as thereby the relation of the observations to one zero point on the graduated scale would have been lost, and the termination likewise of the period of Nutation would have been thrown somewhat later.

II.

I now proceed to describe the manner in which I have discussed the observations.

First, I have reduced all the observations to one epoch; for which I have selected the beginning of the year 1730.

The auxiliary tables requisite for this purpose, containing the corrections for Precession, Aberration, and Nutation, which I shall annex to this memoir, I have computed in the following manner.

(1) The mean places of the observed stars, for the beginning of 1730, were computed by the formula in the *Fundamenta Astron.* p. 136.

$$\text{Loc. } 1730 = \text{loc. } 1755 - 25\left\{p - \frac{5}{18}(p' - p)\right\} - 25\,\mu.$$

In which p and p' denote the *annual precession* for 1755 and 1800, according to the formula *Tab. Reg.* [16]; μ the *annual proper motion* in declination.

I have obtained the values of μ by comparing the places given in the *Fundam. Astron.* with more recent ones. If a star, observed at the Königsberg observatory, is to be found in the Catalogue of Declinations published in the 7th vol. of the Königsberg Observations, then the place there given for 1820 was selected as the basis of the determination of μ. If it be not found there, but is contained in Pond's catalogue for 1828, then its determination depends on a comparison with

Pond's place. If it be not found in that catalogue, then μ was determined by comparison with Piazzi's declination for 1800. The mean places are as follow:

Names of Stars.	Annual Precessioo for 1730.	Declination for 1730.	Annual proper Motioo.	Names of Catalogues.
λ Cassiopeæ	4° 15′ 55″.5	53° 1′ 36″.09	+0″.138	Piazzi
a ——	6 20 53.5	55 3 6.88	−0.048	Bessel
τ Persei	38 49 57.4	51 37 56.46	−0.045	Pond
γ ——	41 21 48.6	52 25 17.12	−0.016	——
a ——	46 18 21.4	48 52 15.84	−0.050	Bessel
δ ——	50 57 49.3	46 53 34.03	−0.039	Pond
9 Aurigæ	71 24 23.0	51 11 51.66	−0.216	Piazzi
a ——	74 12 5.2	45 41 0.71	−0.419	Bessel
18 Camelopardi	77 22 41.0	56 58 59.19	−0.232	Piazzi
δ Aurigæ	84 19 51.2	54 12 58.30	+0.160	Pond
35 Camelopardi	85 46 16.1	51 32 10.54	−0.067	Piazzi
46 Aurigæ	91 1 18.5	49 23 4.52	−0.091	——
β Ursæ maj.	161 19 48.6	57 49 25.75	−0.371	Pond
ψ ——	163 35 14.1	45 57 28.21	−0.077	——
γ ——	174 52 5.4	55 11 44.26	−0.020	Bessel
ε ——	190 30 49.4	57 25 56.99	−0.054	Pond
ζ ——	198 14 53.5	56 20 37.59	−0.023	——
η ——	204 12 52.4	50 40 16.33	−0.024	Bessel
β Draconis	261 5 16.6	52 30 50.45	−0.005	——
ι Herculis	262 57 28.2	46 9 54.81	+0.013	Pond
ξ Draconis	267 13 10.5	56 55 29.12	+0.082	——
γ ——	267 35 11.1	51 32 2.48	−0.056	Bessel
β Cassiopeæ	358 44 56.9	57 39 36.87	−0.203	Pond

Let us denote the value of the *annual precession* in declination for 1730 by

$$20''.06636.\ \text{Cos. } R.\ A.\ 1730,$$

and the *annual proper motion* by m; then the mean declination for the epoch $1730+t$

$$= \text{Dec. } 1730 + tm + tt\,.\,\frac{p'-p}{90}$$

in which $p'-p$ was taken from the *Fund. Ast.* Table I. of the Appendix contains the value of $tm+tt\,.\,\frac{p'-p}{90}$, according to this formula, for the beginning of every year from 1727 to 1747, and for every star, when all whole numbers from -3 to $+17$ are substituted for t. The continuation of the same table gives, moreover, the mean motion for every 10th day of the year, or the value of τm; where log. τ is taken from Tab. 7. of *Tab. Reg.*

(2) If in the formulæ for Nutation, first given in *Fund. Astron*, p. 127, and afterwards amended [b], viz.

$$\Delta L = \{(-18''.0377 \text{ sin. } ☊ + 0''.21720 \text{ sin. } 2☊ - 0''.21633 \text{ sin. } 2☽)\,.\,(1+i)\} - (1''.13640 - 2''.86868\,i) \text{ sin. } 2☉$$

$$\Delta \omega = \{(+\ 9.6480 \text{ cos. } ☊ - 0.09428 \text{ cos. } 2☊ + 0.09391 \text{ cos. } 2☽)\,.\,(1+i)\} + (0.49330 - 1.24527\,i) \text{ cos. } 2☉$$

[b] Bessel in Schumacher's Astronomische Nachrichten, Nos. 34 and 83.

we make $i = -0''.069541$, according to the calculations of Lindenau, then the above becomes changed into [c]

$$\Delta L = -16''.78332 \sin. \Omega + 0''.20209 \sin. 2\Omega - 1''.33589 \sin. 2\odot - 0''.20128 \sin. 2\mathbb{)}$$
$$\Delta \omega = +\ 8.97707 \cos. \Omega - 0.08773 \cos. 2\Omega + 0.57990 \cos. 2\odot + 0.08738 \cos. 2\mathbb{)}.$$

I have denoted the true value of the coefficients of the first term of the expression for $\Delta\omega$ by $8''.97707\ (1+i')$;

whence $1+i = (1-0''.069541) \cdot (1+i')$,

or $i = -0''.069541 + 0.930459\, i'$:

and the above formula, if instead of being expressed in terms of i, be expressed in terms of i', becomes,

$$\Delta\omega = \{ +8''.97707 \cos. \Omega - 0''.08773 \cos. 2\Omega + 0''.08738 \cos. 2\mathbb{)} \} \cdot (1+i') + 0''.57990 \cdot (1-1.998i'.) \cos. 2\odot.$$

It will therefore be necessary to multiply the terms of the formulæ in the *Tab. Reg.* by $1+i'$ if they depend on the moon, and if on the sun by $1+1.998i'$, or, without sensible error, by $1+2i'$.

In *Tab. Reg.* [23] we have the formula for the effect of Nutation in declination:

$$\left\{\begin{array}{l} -6''.68299 \sin. \Omega \cos. \alpha + 8''.97707 \cos. \Omega \sin. \alpha \\ +0.08046 \sin. 2\Omega \cos. \alpha - 0.08773 \cos. 2\Omega \sin. \alpha \\ -0.08015 \sin. 2\mathbb{)} \cos. \alpha + 0.08738 \cos. 2\mathbb{)} \sin. \alpha \end{array}\right\} \cdot (1+i')$$
$$+ \{ -0''.53194 \sin. 2\odot \cos. \alpha + 0''.57990 \cos. 2\odot \sin. \alpha \} \cdot (1-2i')$$

This formula is derived from the expressions for ΔL and $\Delta\omega$, when the value is assigned to the obliquity of the ecliptic which it had in 1800. But as the observations to be compared with it were made at a much earlier period, a slight alteration must be made in those expressions, by substituting, for the value there assumed, the obliquity of the ecliptic for $1730 = 23°.\ 28'.\ 26''.8$. Thus the formula for Nutation becomes,

$$(1)\quad \left\{\begin{array}{l} -6''.68079 \sin. \Omega \cos. \alpha + 8''.97646 \cos. \Omega \sin. \alpha \\ +0.08048 \sin. 2\Omega \cos. \alpha - 0.08776 \cos. 2\Omega \sin. \alpha \\ -0.08017 \sin. 2\mathbb{)} \cos. \alpha + 0.08741 \cos. 2\mathbb{)} \sin. \alpha \end{array}\right\} \cdot (1+i')$$
$$+ \{ -0''.53210 \sin. 2\odot \cos. \alpha + 0''.58011 \cos. 2\odot \sin. \alpha \} \cdot (1-2i')$$

Table II. of the Appendix has been computed according to this formula. It gives the amount of that part of Nutation, which depends on the place of the moon's node, for five times in every year, viz. for the beginning, and for 100, 200, 300, 400 sidereal days after. Following the example of *Tab. Reg.*, the year is supposed to begin when the sun's mean longitude $= 280°$. The rule for computing the argument for entering the table is also the same as that explained in *Tab. Reg.*;

[c] Tab. Reg. [21.]

for which reason it will not be repeated here. The following table contains the fraction by which the date of the day of observation is to be corrected:

1725	+0.071	1737	+0.166
26	−0.170	38	−0.076
27	−0.412	39	−0.319
28	+0.346	40	+0.439
29	+0.104	41	+0.197
30	−0.139	42	−0.045
31	−0.381	43	−0.287
32	+0.377	44	+0.470
33	+0.135	45	+0.228
34	−0.107	46	−0.014
35	−0.350	47	−0.256
36	+0.408	48	+0.502

The part of Nutation, which depends on the sun's longitude, I have inserted by itself in Table III. For as the unknown quantity i' does not influence the values of the two parts of Nutation, depending on ☉ and ☊, in the same proportion, it was necessary to compute each part separately. If we denote the part depending on ☊ by α, and that depending on ☉ by α', then the amount of the quantities taken from Tables II. and III. is equal to $\alpha+\alpha'$; and if the effect of i' be added thereto, it is equal to $\alpha+\alpha'+(\alpha+2\alpha')\,i'$.

The sun's longitudes used in computing α', and which have also been used in computing the Aberration, were communicated to me through the kindness of professor Bessel.

Table of the Sun's Longitude.

	1730.	1750.		1730.	1750.
Jan. 0	280° 3′ 49″.69	280° 3′ 7″.45	July 9	106° 29′ 24″.43	106° 30′ 5″.07
10	290 13 42.39	290 13 0.18	19	116 0 15.47	116 0 55.36
20	300 22 50.90	300 22 10.04	29	125 32 5.53	125 32 43.57
30	310 30 39.19	310 30 0.95	Aug. 8	135 5 24.78	135 5 59.89
Feb. 9	320 36 34.17	320 35 59.72	18	144 40 41.26	144 41 12.44
19	330 40 6.80	330 39 37.16	28	154 18 20.25	154 18 46.61
Mar. 1	340 40 52.93	340 40 28.97	Sept. 7	163 58 43.62	163 59 4.35
11	350 38 34.16	350 38 16.54	17	173 42 8.98	173 42 23.42
21	0 32 58.11	0 32 47.29	27	183 28 49.22	183 28 56.90
31	10 23 58.58	10 23 54.81	Oct. 7	193 18 51.80	193 18 52.42
Apr. 10	20 11 35.61	20 11 38.93	17	203 12 18.44	203 12 11.91
20	29 55 55.05	29 56 5.29	27	213 9 4.78	213 8 51.21
30	39 37 8.36	39 37 25.15	Nov. 6	223 9 0.15	223 8 39.89
May 10	49 15 31.88	49 15 54.69	16	223 11 47.81	233 11 21.42
20	58 51 26.27	58 51 54.42	26	243 17 5.18	243 16 33.42
30	68 25 15.97	68 25 48.62	Dec. 6	253 24 24.57	253 23 48.39
June 9	77 57 28.32	77 58 4.54	16	263 33 13.86	263 32 34.36
19	87 28 32.90	87 29 11.68	26	273 42 57.80	273 42 16.21
29	96 59 0.95	96 59 41.22	36	283 52 59.01	283 52 16.63

(3) The formula for the effect of Aberration in declination is the well known one [d],

$$20''.255\ \{\sin.\alpha \sin.\delta \cos.\omega - \cos.\delta \sin.\omega\} \cos.\odot - 20''.255 \cos.\alpha \sin.\delta \sin.\odot;$$

which also in this case, where the amount of the constant of Aberration is not supposed to be known, but is to be determined from the observations, must be multiplied by a factor containing an unknown quantity; which factor I will denote by $1+\kappa$.

Table IV. of the Appendix, relating to this point, has been computed by assuming values of α, δ, ω for **1730** as well as **1750**; and the variation of Aberration in **10** years, given in the same table, was obtained by comparing both results together. On this subject also I need not enter into further detail, as both the explanation and example in the *Tab. Reg.* are exactly to the same effect.

Let the Aberration taken from the table be denoted by β, then, when corrected by being multiplied by $1+\kappa$, it becomes $\beta+\beta\kappa$. Therefore, in order to reduce an observed polar distance to its value, at the beginning of **1730**, cleared of Precession, Proper Motion, Aberration, and Nutation, we must apply thereto,

$$\text{Precession} + \text{Proper Motion} + \alpha + \alpha' + \beta + (\alpha - 2\alpha')\, i' + \beta\kappa.$$

Let us denote the mean value of the same, such as all the observations of a star afford, when the proper values of i' and κ are assumed, by $P-x$, where P is a quantity near the truth, and x a small correction to be deduced from observation; then the reduced observation gives an equation,

$$0 = \text{observed pol. dist.} + \text{Prec.} + \text{Prop. Mot.} + \alpha + \alpha' + \beta - P + x + (\alpha + 2\alpha')\, i' + \beta\kappa;$$

or, expressed more briefly,

$$0 = n + x + ai' + b\kappa.$$

I have, from every individual observation, obtained equations of this form, which are contained in Table V. Since I have considered the lunar and solar Nutation, as well as the Aberration, separately, it was not necessary to introduce the coefficients of i' and κ into the tables at all.

III.

Having given the formulæ and quantities used in reducing the observations, I proceed to explain how I combined the equations obtained from them, in order to deduce the two final equations, from which there results the most probable amount of both corrections, for the assumed constants of Aberration and Nutation.

A closer examination of the series of observations left by Bradley shews it to be extremely accurate, and that the observations themselves, as the result proves,

[d] Tab. Reg. [27.]

are very accordant one with another. Even in the present day a series of observations better adapted to the object in view could not be made. Perhaps the only alteration to be desired is, that the property of reversion had been given to the sector, whereby we might have been altogether independent of any variation in the line of collimation. We should, however, form an erroneous judgment, were we to suppose the sector's continuance in one position to have been productive of uncertainty in the results; partly, because, during the twenty years through which the observations were carried on, there is scarcely one remarkable alteration in the line of collimation; and partly, because Bradley used to observe stars differing from each other 180° in R. A. in order to detect any important effect, which might be produced by change of position of the instrument. For in stars thus situated opposite to each other, the corrections both for Aberration and Nutation have contrary signs.

In order to determine the variation of collimation, I have divided the whole time including the observations into four periods, and have assumed the error of collimation during each of these periods as constant. These periods are as follows:

1st period from 1727 to 1731
2d ——— 1732 — 1735
3d ——— 1736 — 1740
4th ——— 1741 — 1747

Let the variation which the line of collimation underwent in the last three periods, from the position which it held during the first period, be denoted by y, y', y'', then from each observation, according as it was made in the 1st, 2d, 3d, or 4th periods, there results an equation of this form:

$$0 = n_1 + a_1 i' + b_1 \kappa + x$$
$$0 = n_2 + a_2 i' + b_2 \kappa + x + y$$
$$0 = n_3 + a_3 i' + b_3 \kappa + x + y'$$
$$0 = n_4 + a_4 i' + b_4 \kappa + x + y''$$

Now from all the preceding observations (except such as Bradley himself marked as doubtful) I have deduced equations, by the method of *least squares*, for determining the six unknown quantities i, κ, x, y, y', y'', which are as follows:

$$0 = (n) + (m)\,x + (m_2)\,y + (m_3)\,y' + (m_4)\,y'' + (a)\,i' + (b)\,\kappa$$
$$0 = (n_2) + (m_2)\,x + (m_2)\,y \quad —— \quad —— + (a_2)\,i' + (b_2)\,\kappa$$
$$0 = (n_3) + (m_3)\,x \quad —— + (m_3)\,y' \quad —— + (a_3)\,i' + (b_3)\,\kappa$$
$$0 = (n_4) + (m_4)\,x \quad —— \quad —— + (m_4)\,y'' + (a_4)\,i' + (b_4)\,\kappa$$
$$0 = (an) + (a)\,x + (a_2)\,y + (a_3)\,y' + (a_4)\,y'' + (aa)\,i' + (ab)\,\kappa$$
$$0 = (bn) + (b)\,x + (b_2)\,y + (b_3)\,y' + (b_4)\,y'' + (ab)\,i' + (bb)\,\kappa$$

In which the notation, which, after the example of Gauss, is usually adopted to express the sums generally, if it appear with an index subscribed, refers to the

sums of the observations made within each of the periods specified by such index; but if there be no index, then it refers to the whole of the observations.

I have computed the values of all the coefficients occurring in these equations from the observations of every individual star, and I give them in order in the following table:

Names of Stars.	Periods.	(n)	(a)	(b)	(an)	(bn)	(ab)	(aa)	(bb)	(nn)	(m)
α Aurigæ	I.	+ 4.24	+1159.20	− 199.00	+ 49.33	+264.32	−1182.66	8953.11	6856.20	254.15	153
	II.	+26.73	+ 11.71	− 46.26	+ 32.92	+104.16	+ 389.61	425.56	1530.66	78.69	32
	III.	+ 2.00	− 89.80	+ 68.33	− 17.89	+ 34.16	− 474.07	627.29	639.93	35.47	13
	IV.	+10.28	− 15.26	+ 20.85	− 37.39	+ 62.16	− 90.50	66.46	196.25	30.99	4
	Sums	+43.25	+1065.85	− 156.08	+ 26.97	+464.80	−1357.62	9072.42	9223.04	399.30	202
ψ Ursæ maj.	I.	+ 6.06	+ 5.17	− 98.19	+ 14.44	−167.90	− 146.79	25.35	2026.48	30.32	21
ι Herculis	I.	+24.59	− 450.26	+ 265.41	−187.08	+134.12	−1766.63	3302.06	15165.21	107.35	64
δ Persei	I.	−12.60	+ 266.21	+ 140.37	− 91.42	−111.39	+ 722.90	2055.39	2734.76	37.80	35
α Persei	I.	−34.31	+ 408.53	+ 30.13	−271.08	− 2.81	+ 276.33	3186.03	4886.80	63.35	53
	II.	− 0.05	+ 24.71	+ 35.07	+ 8.34	+ 27.04	+ 358.16	167.82	900.63	1.73	7
	III.	+ 3.01	− 29.60	+ 44.57	− 22.23	+ 33.18	− 329.82	219.05	496.81	3.25	4
	Sums	−31.35	+ 403.64	+ 109.77	−284.97	+ 57.41	+ 304.67	3572.90	5284.24	68.33	64
46 Aurigæ	I.	+16.29	+ 158.00	+ 48.23	+130.38	+ 81.56	+ 364.90	1272.00	986.71	22.30	20
η Ursæ maj.	I.	−26.39	− 516.86	+ 32.15	+187.08	+ 3.34	−2335.98	3219.76	13230.37	52.55	85
	II.	− 1.84	− 109.19	+ 217.01	− 12.80	− 64.27	− 271.75	616.44	6296.71	16.82	28
	III.	−30.25	+ 111.30	+ 238.66	−190.47	−388.88	+1414.02	692.69	3544.54	79.27	19
	IV.	+ 0.69	+ 42.23	+ 191.50	− 5.16	+ 6.41	+ 528.62	520.16	2345.79	8.02	16
	Sums	−57.79	− 472.52	+ 679.32	− 21.35	−443.40	− 665.09	4049.05	25417.41	156.66	148
9 Aurigæ	I.	− 0.94	+ 146.12	+ 90.09	− 11.09	− 35.90	+ 741.50	1231.44	1018.55	11.85	17
	II.	+ 0.64	+ 6.03	+ 29.33	+ 0.90	+ 5.24	+ 57.98	35.73	287.00	0.16	3
	III.	+ 0.34	− 5.34	+ 9.59	− 1.82	+ 3.26	− 52.40	28.52	91.97	0.12	1
	Sums	+ 0.04	+ 146.81	+ 129.01	− 12.01	− 27.40	+ 750.08	1295.69	1397.52	12.13	21
γ Draconis	I.	+26.45	−1138.62	+1021.45	−215.96	+553.88	−6226.26	8342.52	39927.15	77.61	166
	II.	+ 7.78	+ 91.57	+ 514.62	− 54.91	+ 95.97	+1656.09	700.78	12819.94	38.24	48
	III.	−38.57	+ 319.39	+ 488.37	−298.08	−490.28	+3953.89	2480.95	11845.41	70.40	42
	IV.	+ 1.62	− 27.54	+ 586.21	− 14.77	+ 26.24	− 743.87	564.06	12303.46	15.78	35
	Sums	− 2.72	− 755.20	+2510.65	−583.72	+185.81	−1360.15	12088.31	76895.96	202.03	291
35 Camelopardi	I.	+14.48	+ 239.54	+ 48.70	+ 89.29	+ 53.96	+ 519.32	1843.79	2071.26	29.93	32
	II.	+ 0.39	+ 2.33	+ 8.60	+ 0.91	+ 3.35	+ 20.03	5.43	73.96	0.15	1
	III.	+ 1.07	− 28.72	+ 34.85	− 3.48	+ 8.43	− 203.49	171.38	255.90	1.82	5
	IV.	+ 1.90	+ 7.12	+ 9.52	+ 13.53	+ 18.09	+ 67.78	50.69	90.63	3.61	1
	Sums	+17.84	+ 220.27	+ 101.67	+100.25	+ 83.83	+ 403.64	2071.29	2491.75	35.51	39
τ Persei	I.	+10.32	+ 271.75	+ 216.62	+ 49.33	− 45.95	+1648.70	1929.25	4170.36	46.77	39
	II.	+ 0.82	+ 36.04	+ 88.62	+ 2.17	+ 9.93	+ 459.49	201.86	1123.12	1.53	7
	III.	+ 4.25	− 37.58	− 0.09	− 32.77	+ 53.04	− 478.28	282.55	812.14	9.82	5
	Sums	+15.39	+ 270.21	+ 305.15	+ 18.73	+ 17.02	+1629.88	2413.66	6105.62	58.12	51
γ Persei	I.	+ 4.46	+ 291.81	+ 321.07	+ 32.63	+ 96.99	+1623.45	2616.15	4750.53	33.40	40
	II.	+ 3.67	+ 28.99	+ 63.93	+ 20.36	+ 47.30	+ 370.72	171.57	817.62	4.07	5
	III.	− 4.17	− 45.16	+ 75.33	+ 9.27	− 52.11	− 566.85	339.96	946.67	5.51	6
	Sums	+ 3.96	+ 275.64	+ 460.33	+ 62.26	+ 92.18	+1427.32	3127.68	6514.82	42.98	51

Names of Stars.	Periods.	(n)	(a)	(b)	(an)	(bn)	(ab)	(aa)	(bb)	(nn)	(m)
β Draconis	I.	+128.05	−992.56	+ 781.99	−909.61	+ 235.13	−4883.45	7522.84	34079.93	203.41	137
	II.	+ 25.49	+ 68.33	+ 592.10	+ 99.68	+ 208.17	+1198.02	621.99	12162.93	44.21	42
	III.	+ 43.27	+239.03	+ 393.07	+340.91	+ 489.23	+3272.65	1982.57	9395.83	71.06	30
	IV.	+ 9.48	− 16.53	+ 521.47	+ 52.91	+ 96.86	− 388.28	585.37	11339.79	27.21	31
	Sums	+206.29	−701.73	+2288.63	−416.11	+1029.39	− 801.06	10712.77	66978.48	345.89	240
λ Cassiopeæ	I.	− 16.91	+111.85	+ 430.27	− 68.26	− 235.90	+1716.96	493.97	6728.78	23.07	31
	II.	+ 1.40	+ 25.30	+ 86.41	+ 2.24	+ 21.12	+ 357.18	121.43	1254.45	4.33	6
	III.	− 0.47	− 11.74	+ 29.24	+ 2.43	− 8.14	− 171.56	68.94	427.84	4.70	2
	Sums	− 15.98	+125.41	+ 545.92	− 63.59	− 222.92	+1902.58	684.34	8411.07	32.10	39
δ Aurigæ	I.	− 1.84	+189.24	− 60.91	− 14.54	+ 21.73	+ 524.81	1411.96	2255.45	19.20	26
	II.	− 1.81	− 3.23	+ 9.16	+ 5.84	+ 16.57	− 29.59	10.43	83.91	3.28	1
	III.	+ 12.73	− 32.34	+ 40.41	− 82.60	+ 95.08	− 265.59	210.31	342.59	33.44	5
	IV.	+ 7.85	+ 3.30	+ 18.54	+ 16.64	+ 73.52	+ 42.82	66.17	174.33	31.04	2
	Sums	+ 16.93	+156.97	+ 7.20	− 74.66	+ 206.90	+ 272.45	1698.87	2856.28	86.96	34
α Cassiopeæ	I.	+ 0.79	+357.43	+ 341.16	− 53.10	− 240.85	+1489.99	1661.52	15589.94	79.63	88
	II.	+ 0.23	+ 33.50	+ 9.14	− 1.83	− 14.30	+ 30.95	175.17	1449.96	4.44	7
	III.	− 1.45	− 7.70	+ 60.93	− 0.96	− 21.96	− 114.97	82.91	928.46	1.43	4
	IV.	+ 3.01	− 3.13	− 16.38	− 8.69	− 29.25	+ 105.46	49.74	276.28	5.58	2
	Sums	+ 2.58	+380.10	+ 394.85	− 64.58	− 306.36	+1511.43	1969.34	18244.64	91.08	101
γ Ursæ maj.	I.	+ 6.05	−115.22	+ 102.95	− 8.86	+ 116.98	− 630.14	349.61	7823.05	46.22	50
	III.	− 1.57	+ 1.07	+ 11.15	+ 3.01	− 6.05	+ 21.72	22.95	73.25	1.89	2
	IV.	+ 6.67	+ 35.35	+ 61.21	+ 32.92	+ 99.65	+ 451.72	258.10	943.48	18.57	8
	Sums	+ 11.15	− 78.80	+ 175.31	+ 27.07	+ 210.58	− 156.70	630.66	8839.78	66.68	60
ζ Ursæ maj.	I.	− 17.08	−414.46	+ 257.22	+105.13	+ 176.53	−1918.43	2328.44	13522.90	63.63	76
	II.	− 7.61	− 90.79	+ 123.50	+ 50.11	+ 219.82	− 111.20	501.95	4949.63	31.91	21
	III.	− 8.07	+ 67.07	+ 159.75	− 45.62	− 69.85	+ 851.59	374.50	2370.73	53.76	13
	IV.	+ 30.98	+ 59.18	+ 177.72	+164.21	+ 375.00	+ 795.78	508.68	2254.86	82.35	15
	Sums	− 1.78	−379.00	+ 718.19	+273.83	+ 701.50	− 382.26	3713.57	23098.12	231.65	125
ξ Draconis	I.	+ 6.46	−371.09	+ 398.53	− 24.13	− 309.52	−2462.40	2685.54	13045.07	108.07	55
18 Camelopardi	I.	− 3.38	+193.96	− 5.09	− 15.84	+ 116.16	− 53.82	1571.01	2463.02	43.14	25
	III.	+ 3.08	− 30.28	+ 48.43	− 21.38	+ 24.04	− 292.65	187.88	478.15	7.03	5
	Sums	− 0.30	+163.68	+ 43.34	− 37.22	+ 140.20	− 346.47	1758.89	2941.17	50.17	30
ϵ Ursæ maj.	I.	− 29.59	−340.66	+ 164.36	+140.59	+ 154.03	−1071.99	1646.33	14145.01	72.20	75
	II.	− 15.33	−102.22	+ 111.98	+ 88.86	+ 201.74	− 242.84	559.38	4643.90	50.48	21
	III.	− 8.52	+ 19.62	+ 36.08	− 34.20	− 58.12	+ 138.28	86.72	268.65	16.65	5
	IV.	+ 0.48	+ 60.06	+ 162.05	+ 45.50	+ 146.64	+ 868.84	545.40	2280.96	52.85	17
	Sums	− 52.96	−336.20	+ 474.47	+240.75	+ 444.29	− 307.71	2837.83	21338.52	192.18	118
β Cassiopeæ	I.	+ 30.92	+259.63	+ 340.69	+156.21	+ 811.78	+ 963.89	1036.72	17251.88	117.05	85
	II.	+ 3.57	+ 35.33	+ 39.94	+ 19.46	+ 86.70	+ 232.83	182.46	1682.25	7.26	7
	III.	+ 5.78	− 9.96	+ 77.58	− 21.32	+ 90.49	− 153.08	105.96	1204.35	10.67	5
	IV.	+ 7.26	− 4.95	+ 8.32	− 6.27	+ 16.70	− 72.79	57.47	94.89	29.38	2
	Sums	+ 47.53	+280.05	+ 466.53	+148.08	+1005.67	+ 970.85	1382.61	20233.37	164.36	99
β Ursæ maj.	I.	+ 21.29	− 7.13	+ 2.88	− 7.73	+ 22.88	− 320.95	77.65	5314.54	28.38	38
	II.	+ 2.50	− 18.87	+ 2.02	− 13.97	− 0.09	− 15.46	121.31	4.76	3.26	3
	Sums	+ 23.79	− 26.00	+ 4.90	− 21.70	+ 22.79	− 336.41	198.96	5319.30	31.64	41

According to this table, therefore, all the observations of any star, α Aurigæ for example, give the following equations:

$$
\begin{aligned}
0 &= +43.25 + 202.00\,x + 32\,y + 13\,y' + 4\,y'' + 1065.85\,i' - 156.08\,\kappa \\
0 &= +26.73 + 32.00\,x + 32\,y \quad .... \quad .... + 11.71\,i' - 46.26\,\kappa \\
0 &= +2.00 + 13.00\,x \quad .... + 13\,y' \quad .... - 89.80\,i' + 68.33\,\kappa \\
0 &= +10.28 + 4.00\,x \quad .... \quad .... + 4\,y'' - 15.26\,i' + 20.85\,\kappa \\
0 &= +26.97 + 1065.85\,x + 11.71\,y - 89.80\,y' - 15.26\,y'' + 9072.42\,i' - 1357.62\,\kappa \\
0 &= +464.80 - 156.08\,x - 46.26\,y + 68.33\,y' + 20.85\,y'' - 1357.62\,i' + 9223.04\,\kappa
\end{aligned}
$$

All the other stars give equations similar to these. The unknown quantity x, which occurs in these equations, is different for each star, and must be eliminated from the remaining equations by means of the first; whence we have for each star the following expressions:

α Aurigæ.

$$
\begin{aligned}
0 &= +19.88 + 26.93\,y - 2.06\,y' - 0.63\,y'' - 157.14\,i' - 21.53\,\kappa \\
0 &= -0.78 - 2.06\,y + 12.16\,y' - 0.26\,y'' - 158.39\,i' + 78.37\,\kappa \\
0 &= +9.42 - 0.63\,y - 0.26\,y' + 3.92\,y'' - 36.37\,i' + 23.94\,\kappa \\
0 &= -201.24 - 157.14\,y - 158.39\,y' - 36.37\,y'' + 3448.57\,i' - 534.07\,\kappa \\
0 &= +498.22 - 21.53\,y + 78.37\,y' + 23.94\,y'' - 534.07\,i' + 9102.44\,\kappa
\end{aligned}
$$

ψ Ursæ maj.

$$
\begin{aligned}
0 &= +12.95 \quad .... \quad .... \quad .... + 24.08\,i' - 122.62\,\kappa \\
0 &= -139.56 \quad .... \quad .... \quad .... - 122.62\,i' + 1567.37\,\kappa
\end{aligned}
$$

ι Herculis.

$$
\begin{aligned}
0 &= -14.08 \quad .... \quad .... \quad .... + 134.42\,i' + 100.64\,\kappa \\
0 &= +32.14 \quad .... \quad .... \quad .... + 100.64\,i' + 14064.54\,\kappa
\end{aligned}
$$

δ Persei.

$$
\begin{aligned}
0 &= +4.42 \quad .... \quad .... \quad .... + 30.57\,i' - 344.81\,\kappa \\
0 &= -60.86 \quad .... \quad .... \quad .... - 344.81\,i' + 2171.78\,\kappa
\end{aligned}
$$

α Persei.

$$
\begin{aligned}
0 &= +3.38 + 6.24\,y - 0.44\,y' \quad .... - 19.41\,i' + 23.06\,\kappa \\
0 &= +4.97 - 0.44\,y + 3.75\,y' \quad .... - 54.83\,i' + 37.71\,\kappa \\
0 &= -87.25 - 19.44\,y - 54.83\,y' \quad .... + 1027.25\,i' - 387.63\,\kappa \\
0 &= +111.18 + 23.06\,y + 37.71\,y' \quad .... - 387.63\,i' + 5095.97\,\kappa
\end{aligned}
$$

46 *Aurigæ.*

$$
\begin{aligned}
0 &= +1.69 \quad .... \quad .... \quad .... + 23.77\,i' - 16.13\,\kappa \\
0 &= +42.28 \quad .... \quad .... \quad .... - 16.13\,i' + 870.40\,\kappa
\end{aligned}
$$

η Ursæ maj.

$$
\begin{aligned}
0 &= +9.09 + 22.70\,y - 3.60\,y' - 3.03\,y'' - 19.79\,i' + 102.11\,\kappa \\
0 &= -22.83 - 3.60\,y + 16.56\,y' - 2.05\,y'' + 171.96\,i' + 160.69\,\kappa \\
0 &= +6.94 - 3.03\,y - 2.05\,y' + 14.27\,y'' + 93.31\,i' + 53.84\,\kappa \\
0 &= -205.85 - 19.79\,y + 171.96\,y' + 93.31\,y'' + 2540.43\,i' + 1273.87\,\kappa \\
0 &= -206.26 + 102.11\,y + 160.69\,y' + 53.84\,y'' + 1273.87\,i' + 22925.35\,\kappa
\end{aligned}
$$

9 *Aurigæ.*

$$0 = +0.03 + 2.57\,y - 0.14\,y' \ldots - 14.94\,i' + 10.90\,\kappa$$
$$0 = +0.34 - 0.14\,y + 0.95\,y' \ldots - 12.33\,i' + 3.45\,\kappa$$
$$0 = -12.29 - 14.94\,y - 12.33\,y' \ldots + 269.33\,i' - 151.82\,\kappa$$
$$0 = -27.65 + 10.90\,y + 3.45\,y' \ldots - 151.82\,i' + 604.98\,\kappa$$

γ *Draconis.*

$$0 = +8.23 + 40.08\,y - 6.93\,y' - 5.77\,y'' + 216.14\,i' + 100.49\,\kappa$$
$$0 = -38.18 - 6.93\,y + 35.94\,y' - 5.05\,y'' + 428.39\,i' + 126.00\,\kappa$$
$$0 = +1.95 - 5.77\,y - 5.05\,y' + 30.79\,y'' + 63.29\,i' + 284.23\,\kappa$$
$$0 = -590.79 + 216.14\,y + 428.39\,y' + 63.29\,y'' + 10129.44\,i' + 5155.56\,\kappa$$
$$0 = +209.28 + 100.49\,y + 126.00\,y' + 284.23\,y'' + 5155.56\,i' + 55234.92\,\kappa$$

35 *Camelopardi.*

$$0 = -0.07 + 0.97\,y - 0.13\,y' - 0.03\,y'' - 3.32\,i' + 5.99\,\kappa$$
$$0 = -1.22 - 0.13\,y + 4.36\,y' - 0.13\,y'' - 56.96\,i' + 21.82\,\kappa$$
$$0 = +1.44 - 0.03\,y - 0.13\,y' + 0.97\,y'' + 1.47\,i' + 6.91\,\kappa$$
$$0 = -0.51 - 3.32\,y - 56.96\,y' + 1.47\,y'' + 827.23\,i' - 170.59\,\kappa$$
$$0 = +37.32 + 5.99\,y + 21.82\,y' + 6.91\,y'' - 170.59\,i' + 2226.71\,\kappa$$

τ *Persei.*

$$0 = -1.29 + 6.04\,y - 0.69\,y' \ldots - 1.05\,i' + 46.74\,\kappa$$
$$0 = +2.74 - 0.69\,y + 4.51\,y' \ldots - 64.07\,i' - 30.01\,\kappa$$
$$0 = -62.81 - 1.05\,y - 64.07\,y' \ldots + 981.96\,i' + 13.10\,\kappa$$
$$0 = -75.06 + 46.74\,y - 30.01\,y' \ldots + 13.10\,i' + 4279.83\,\kappa$$

γ *Persei.*

$$0 = +3.28 + 4.51\,y - 0.59\,y' \ldots + 1.97\,i' + 18.80\,\kappa$$
$$0 = -4.64 - 0.59\,y + 5.29\,y' \ldots - 77.59\,i' + 21.17\,\kappa$$
$$0 = +40.86 + 1.97\,y - 77.59\,y' \ldots + 1637.95\,i' - 1060.62\,\kappa$$
$$0 = +56.44 + 18.80\,y + 21.17\,y' \ldots - 1060.62\,i' + 2359.82\,\kappa$$

β *Draconis.*

$$0 = -10.61 + 34.65\,y - 5.25\,y' - 5.43\,y'' + 191.13\,i' + 193.16\,\kappa$$
$$0 = +17.48 - 5.25\,y + 26.25\,y' - 3.88\,y'' + 326.75\,i' + 108.11\,\kappa$$
$$0 = -17.17 - 5.43\,y - 3.88\,y' + 27.00\,y'' + 74.11\,i' + 218.02\,\kappa$$
$$0 = +187.06 + 191.13\,y + 326.75\,y' + 74.11\,y'' + 8661.01\,i' + 5864.23\,\kappa$$
$$0 = -930.05 + 193.16\,y + 108.11\,y' + 218.02\,y'' + 5864.23\,i' + 45325.52\,\kappa$$

λ *Cassiopeæ.*

$$0 = +3.86 + 5.08\,y - 0.31\,y' \ldots + 6.01\,i' + 2.42\,\kappa$$
$$0 = +0.35 - 0.31\,y + 1.90\,y' \ldots - 18.17\,i' + 1.24\,\kappa$$
$$0 = -12.20 + 6.01\,y - 18.17\,y' \ldots + 281.07\,i' + 147.08\,\kappa$$
$$0 = +0.77 + 2.42\,y + 1.24\,y' \ldots + 147.08\,i' + 769.24\,\kappa$$

δ Aurigæ.

$0 = -\ 2.31 + 0.97\,y - 0.15\,y' - 0.06\,y'' - 7.85\,i' + 8.95\,\kappa$
$0 = +\ 10.24 - 0.15\,y - 4.26\,y' - 0.29\,y'' - 55.42\,i' + 39.35\,\kappa$
$0 = +\ 6.85 - 0.06\,y - 0.29\,y' + 1.88\,y'' - 5.93\,i' + 18.12\,\kappa$
$0 = -152.83 - 7.85\,y - 55.42\,y' - 5.93\,y'' + 974.17\,i' + 239.21\,\kappa$
$0 = +203.31 + 8.95\,y + 39.35\,y' + 18.12\,y'' + 239.21\,i' + 2854.75\,\kappa$

α Cassiopeæ.

$0 = +\ 0.06 + 6.51\,y - 0.28\,y' - 0.14\,y'' + 7.16\,i' - 18.23\,\kappa$
$0 = -\ 1.55 - 0.28\,y + 3.84\,y' - 0.08\,y'' - 22.75\,i' + 45.29\,\kappa$
$0 = +\ 2.96 - 0.14\,y - 0.08\,y' + 1.96\,y'' - 10.66\,i' - 24.20\,\kappa$
$0 = -\ 74.03 + 7.16\,y - 22.75\,y' - 10.66\,y'' + 538.87\,i' + 25.43\,\kappa$
$0 = -316.17 - 18.23\,y + 45.29\,y' - 24.20\,y'' + 25.43\,i' + 16700.98\,\kappa$

γ Ursæ maj.

$0 = -\ 1.94 \ldots . + 1.93\,y' - 0.27\,y'' + 3.70\,i' + 5.31\,\kappa$
$0 = -\ 8.20 \ldots . - 0.27\,y' + 6.93\,y'' + 45.86\,i' + 37.84\,\kappa$
$0 = +\ 41.71 \ldots . + 3.70\,y' + 45.86\,y'' + 527.17\,i' + 37.54\,\kappa$
$0 = +178.00 \ldots . + 5.31\,y' + 37.84\,y'' + 37.54\,i' + 8327.54\,\kappa$

ζ Ursæ maj.

$0 = -\ 7.31 + 17.47\,y - 2.18\,y' - 2.52\,y'' - 27.12\,i' + 2.84\,\kappa$
$0 = -\ 7.88 - 2.18\,y + 11.65\,y' - 1.56\,y'' + 106.48\,i' + 85.06\,\kappa$
$0 = +\ 31.19 - 2.52\,y - 1.56\,y' + 13.20\,y'' + 104.66\,i' + 91.54\,\kappa$
$0 = +268.43 - 27.12\,y + 106.48\,y' + 104.66\,y'' + 2564.44\,i' + 1795.29\,\kappa$
$0 = +711.73 + 2.84\,y + 85.06\,y' + 91.54\,y'' + 1795.29\,i' + 18971.72\,\kappa$

ξ Draconis.

$0 = +\ 19.46 \ldots . \ldots . \ldots . + 181.72\,i' + 226.54\,\kappa$
$0 = -356.33 \ldots . \ldots . \ldots . + 226.54\,i' + 10157.33\,\kappa$

18 *Camelopardi.*

$0 = +\ 3.13 \ldots . + 4.17\,y' \ldots . - 57.55\,i' + 41.21\,\kappa$
$0 = -\ 35.58 \ldots . - 57.55\,y' \ldots . + 866.25\,i' - 582.88\,\kappa$
$0 = +140.63 \ldots . + 41.21\,y' \ldots . - 582.88\,i' + 2878.56\,\kappa$

ε Ursæ maj.

$0 = -\ 5.90 + 17.26\,y - 0.89\,y' - 3.03\,y'' - 42.39\,i' + 27.54\,\kappa$
$0 = -\ 6.28 - 0.89\,y + 4.79\,y' - 0.72\,y'' + 33.87\,i' + 15.98\,\kappa$
$0 = +\ 8.11 - 3.03\,y - 0.72\,y' + 14.55\,y'' + 108.50\,i' + 93.69\,\kappa$
$0 = +\ 89.86 - 42.39\,y + 33.87\,y' + 108.50\,y'' + 1879.93\,i' + 1044.13\,\kappa$
$0 = +657.24 + 27.54\,y + 15.98\,y' + 93.69\,y'' + 1044.13\,i' + 19430.69\,\kappa$

β Cassiopeæ.

$0 = +\ 0.21 + 6.51\,y - 0.35\,y' - 0.14\,y'' + 15.50\,i' + 6.95\,\kappa$
$0 = +\ 3.35 - 0.35\,y + 4.75\,y' - 0.10\,y'' - 24.13\,i' + 54.02\,\kappa$
$0 = +\ 6.30 - 0.14\,y - 0.10\,y' + 1.96\,y'' - 10.62\,i' - 1.11\,\kappa$
$0 = +\ 13.41 + 15.50\,y - 24.13\,y' - 10.62\,y'' + 587.88\,i' - 350.97\,\kappa$
$0 = +781.69 + 6.95\,y + 54.02\,y' - 1.11\,y'' - 350.97\,i' + 18034.92\,\kappa$

β Ursæ maj.

$$0 = +\ 0.76 + 2.78\,y \quad \ldots\ldots \quad \ldots\ldots \quad -\ 16.97\,i' +\ 1.66\,\kappa$$
$$0 = -\ 6.61 - 16.97\,y \quad \ldots\ldots \quad \ldots\ldots \quad +182.47\,i' -\ 333.30\,\kappa$$
$$0 = +19.95 + 1.66\,y \quad \ldots\ldots \quad \ldots\ldots \quad -333.30\,i' + 5318.71\,\kappa$$

These equations for all the stars, being added together, give the following equations, indicating the most probable values of y, y', y'' i', κ:

$$\begin{aligned}
0 &= +\ 21.29 + 201.27\,y - 23.99\,y' - 20.78\,y'' + 127.90\,i' + 511.85\,\kappa \\
0 &= -\ 42.70 - 23.99\,y + 183.54\,y' - 14.39\,y'' + 468.96\,i' + 814.75\,\kappa \\
0 &= +\ 49.79 - 20.78\,y - 14.39\,y' + 117.43\,y'' + 427.62\,i' + 802.82\,\kappa \\
0 &= -\ 780.22 + 127.90\,y + 468.96\,y' + 427.62\,y'' + 38319.88\,i' + 11867.18\,\kappa \\
0 &= +1568.24 + 511.85\,y + 814.75\,y' + 802.82\,y'' + 11867.18\,i' + 269274.07\,\kappa
\end{aligned} \tag{2}$$

If from these we eliminate y, y', y'', we have the two following equations for determining i' and κ:

$$\begin{aligned}
0 &= -\ 858.50 + 34292.73\,i' + 4146.80\,\kappa \\
0 &= +1372.76 + 4146.80\,i' + 254099.40\,\kappa
\end{aligned} \tag{3}$$

and hence,

$$i' = +0''.0257382$$
$$\kappa = -0.0058255.$$

If we substitute these values in the expressions before given, viz.

$$i = -0''.069541 + 0''.930459\,i',$$

and the Constant of Aberrat. $= 20''.255\ (1 + \kappa)$, then we have

$$i = -0.045593;$$

and consequently the formulæ for Nutation for the beginning of the year 1800 becomes,

$$\Delta L = -17''.2152 \text{ sin. } ☊ + 0''.20730 \text{ sin. } 2\,☊ - 1''.26719 \text{ sin. } 2\,☉ - 0''.20647 \text{ sin. } 2\,☽$$
$$\Delta \omega = +\ 9.2080 \text{ cos. } ☊ - 0.08998 \text{ cos. } 2\,☊ + 0.55008 \text{ cos. } 2\,☉ + 0.08963 \text{ cos. } 2\,☽ .$$

and the Constant of Aberration $= 20''.1371$.

In the same way I have obtained equations of conditions for i' and κ from observations of γ Draconis made by Bradley and Molyneux at Kew, and found

$$0 = +\ 9.72 + 64.00x - 553.04\,i' + 356.54\,\kappa$$
$$0 = -70.96 - 553.04\,x + 4831.39\,i' - 2760.35\,\kappa$$
$$0 = +47.01 + 356.54\,x - 2760.35\,i' + 10825.15\,\kappa$$

and by eliminating x,

$$\begin{aligned}
0 &= +13.03 + 52.39\,i' + 320.65\,\kappa \\
0 &= -\ 7.14 + 320.65\,i' + 8838.85\,\kappa
\end{aligned} \tag{4}$$

As all these observations were made within the space of a year, they are but of little use in determining the Nutation (i); and if we were to deduce from them the value of i' as well as κ, we should obtain a value of the former with only a

small degree of accuracy. On the other hand, the value of κ, given by the second of the above equations, depends so little on the value of i', that if we substitute the value of i' obtained from the observations at Wansted, which we have already discussed, we may arrive at as near an approximation to the value of κ, as if it were deduced independently from the observations at Kew. Accordingly, if we make $i' = 0.0257382$, the last equation becomes,

$$0 = +1.112 + 8838.85\,\kappa;$$

and therefore,

$$\kappa = -0.0001258;$$

or the value of the Const. of Aberr. $= 20''.2527$;

which so far agrees with the result obtained from the Wansted observations alone, that both indicate a diminution of the assumed Constant of Aberration.

The best method, of combining together the observations at Kew and at Wansted, is to add together the first and the last equations derived from both series of observations, and to solve them by means of these new equations containing both values. They are as follows:

$$0 = -\ 845.47 + 34345.12\,i' + \ 4467.45\,\kappa$$
$$0 = +1365.62 + \ 4467.45\,i' + 262938.25\,\kappa$$

which solved, give

$$i' = +0.025268;$$

or $$i = -0.046030$$

and $$\kappa = -0.0056244.$$

We have then, as the combined result of the Kew and Wansted observations, for the formulæ for Nutation,

$$\Delta L = -17''.2076 \sin. \Omega + 0''.20720 \sin. 2\Omega - 1''.26847 \sin. 2\odot - 0''.20638 \sin. 2\mathbb{)}$$
$$\Delta \omega = +\ 9.2040 \cos. \Omega - 0.08994 \cos. 2\Omega + 0.55063 \cos. 2\odot + 0.08959 \cos. 2\mathbb{)}$$

and Constant of Aberr. $= 20''.1411$.

Having, in the manner thus explained, found the value of the Constant of Aberration, and the formulæ for Nutation, derived from the combined observations of Molyneux and Bradley, it remains for me now to ascertain the amount of the unknown quantities y, y', y'', or the corrections which are to be applied to the observations, made in any one of the assumed periods, on account of any alteration in the line of collimation of the instrument.

By solution of equat. (2) I obtain the following values:

$$y = -0''.1351$$
$$y' = +0.1821$$
$$y'' = -0.4798$$

We see then that, during the 20 years which include the observations, the line of collimation underwent only a slight alteration, and up to the third period we

may, without sensible error, assume the collimation as constant, or make y and $y' = 0$. It is only in the third period that a perceptible change seems to have taken place, for the greater part of the observations concurs in giving the same sign.

Lastly, by substituting these values, as well as those of i'' and κ deduced from equat. (3), I have deduced the value x for each of the following stars, by which to correct their assumed polar distances (P), and found them as follows:

Names of Stars.	Assumed value of P.	x	Place of the Star by the Instrument at the beginning of 1730.
α Aurigæ	44° 15′+148″	−0″.335	44° 17′ 27″.665
ψ Ursæ maj.	44 0+ 65	−0.322	44 1 4.678
ι Herculis	43 50− 90	−0.179	43 48 29.821
δ Persei	43 5+ 7	+0.172	43 5 7.172
α ——	41 5+ 71	+0.341	41 6 11.341
46 Aurigæ	40 35+ 24	−1.004	40 35 22.996
η Ursæ maj.	39 15+189	+0.551	39 18 9.551
9 Aurigæ	38 45+ 93	−0.135	38 46 32.865
γ Draconis	38 25+ 82	+0.180	38 26 22.180
35 Camelopardi	38 25+ 72	−0.595	38 26 11.405
τ Persei	38 20+ 28	−0.403	38 20 27.597
γ ——	37 35−114	−0.172	37 33 5.828
β Draconis	37 30−147	−0.666	37 27 32.334
λ Cassiopeæ	36 55+ 99	+0.419	36 56 39.419
δ Aurigæ	35 45+ 13	−0.610	35 45 12.390
α Cassiopeæ	34 55+ 13	−0.087	34 55 12.913
γ Ursæ maj.	34 45+ 95	−0.077	34 46 34.923
ζ ——	33 35+160	+0.187	33 37 40.187
ξ Draconis	33 0+133	+0.098	33 2 13.098
18 Camelopardi	33 0− 43	−0.152	32 59 16.848
ϵ Ursæ maj.	32 20+143	+0.631	32 22 23.631
β Cassiopeæ	32 20− 81	−0.515	32 18 28.485
β Ursæ maj.	32 15−360	−0.553	32 8 59.447

IV.

Here the investigation which is the object of this Memoir might close, if the assumption on which it is based, viz. that the observations of all the stars employed possess an equal degree of certainty, needed no proof. It was convenient to conduct the investigation on this assumption, but it were unpardonable not to examine its accuracy, nor to avail ourselves of the result of such examination.

There can be no doubt that the observations of the different stars gave a mean error, greater in proportion to their zenith distance when they passed the meridian. This must necessarily be the case, partly, because Bradley has not given us the indications of the meteorological instruments, and we are therefore compelled to neglect the changes of refraction due to such indications; partly, because the

temperature of the upper and lower rooms, through which the Sector passed, could seldom or never have been the same; consequently the comparative length [*vergleichungsweise*] of the graduated arc to the radius must have been generally either too great or too small, and for want of observations of the temperature at different heights of the room, we are not in a situation to make allowance for it.

It would be wrong, therefore, to allow an equal weight to all the observations of the different stars.

In order to ascertain the mean error which they severally indicate, I have taken out the sum of the squares of the errors of each individual star, after the values of the unknown quantities x, y, y', y'', i', κ (found in the last section) have been substituted. The following table contains these sums, and also the quotients after they have been divided by the number of the observations of each star respectively.

Names of Stars.	Z. D.	No. of Obs. $=m$.	Sums of the Squares of the Errors $=nn$.	$\sqrt{\frac{n.n}{m}}$
	° ′			″
α Aurigæ	5 48	202	384.08	1.3786
ψ Ursæ maj.	5 31	21	30.97	1.2144
ι Herculis	5 19	64	97.35	1.2333
δ Persei	4 35	35	34.41	0.9915
α ——	2 36	64	48.71	0.8724
46 Aurigæ	2 5	20	8.68	0.6588
η Ursæ maj.	0 48	148	123.81	0.9147
9 Aurigæ	0 17	21	12.11	0.7594
γ Draconis	0 3	291	170.09	0.7645
35 Camelopardi	0 3	39	25.63	0.8107
τ Persei	0 9	51	53.09	1.0203
γ ——	0 57	51	46.15	0.9513
β Draconis	1 2	240	227.95	0.9746
λ Cassiopeæ	1 33	39	24.14	0.7868
δ Aurigæ	2 44	34	66.82	1.4020
α Cassiopeæ	3 34	101	86.66	0.9263
γ Ursæ maj.	3 43	60	60.43	1.0035
ζ ——	4 52	125	209.29	1.2940
ξ Draconis	5 27	55	112.83	1.4323
18 Camelopardi	5 30	30	48.20	1.2676
ϵ Ursæ maj.	5 57	118	160.56	1.1665
β Cassiopeæ	6 11	99	130.32	1.1473
β Ursæ maj.	6 21	41	17.63	0.6558

It appears from this list, as might have been anticipated, that the observations are more uncertain, the farther they are removed from the zenith, and the law of the mean errors is on the whole as regular as could be expected. Nevertheless, in order to determine them still nearer, I have compared them with the simple formula

$$\epsilon\epsilon = \alpha + \beta z$$

depending on the zenith distance; in which z denotes the zen. dist. expressed in *degrees*. The values α and β most nearly corresponding with the above table are

$$\alpha = 0.6121$$
$$\beta = 0.1737$$

Since by assuming these values of α and β the formula corresponds as nearly as we can expect with the errors actually found by observation, I have had no hesitation in making a new determination of the Constants of Aberration and Nutation based on this hypothesis, instead of that of the equal value of the observations of all stars. Accordingly, by multiplying the equations resulting from the observations of each star by

$$\frac{\alpha}{\epsilon\epsilon} = \frac{\alpha}{\alpha + \beta z}$$

I have given them the weight, which they would have had if the observations on which they depend were as accurate as those made in the zenith, i. e. as accurate as observations whose *mean error* $= \sqrt{0.6121} = 0''.7824$.

I shall, in the first place, here give the values of the factors $\frac{\alpha}{\epsilon\epsilon}$

Names of Stars.	Z. D.	ϵ	$\frac{\alpha}{\epsilon\epsilon}$
α Aurigæ	5° 48′	1″.2726	0.3780
ψ Ursæ maj.	5 31	1.2533	0.3897
ι Herculis	5 19	1.2394	0.3985
δ Persei	4 35	1.1866	0.4348
α ——	2 36	1.0314	0.5755
46 Aurigæ	2 5	0.9869	0.6286
η Ursæ maj.	0 48	0.8666	0.8151
9 Aurigæ	0 17	0.8132	0.9257
γ Draconis	0 3	0.7879	0.9861
35 Camelopardi	0 3	0.7879	0.9861
τ Persei	0 9	0.7989	0.9592
γ ——	0 57	0.8815	0.7877
β Draconis	1 2	0.8897	0.7734
λ Cassiopeæ	1 33	0.9489	0.6799
δ Aurigæ	2 44	1.0425	0.5633
α Cassiopeæ	3 34	1.1098	0.4971
γ Ursæ maj.	3 43	1.1215	0.4867
ζ ——	4 52	1.2072	0.4200
ξ Draconis	5 27	1.2485	0.3928
18 Camelopardi	5 30	1.2520	0.3906
ϵ Ursæ maj.	5 57	1.2828	0.3720
β Cassiopeæ	6 11	1.2985	0.3631
β Ursæ maj.	6 21	1.3095	0.3570

By multiplying the equations for each star in sect. III. by these factors, we have the five following new final equations, depending on the Wansted observations alone.

$$
\begin{aligned}
0 &= +\ 14.52 + 135.62\,y - \ 18.04\,y' - \ 14.97\,y'' + \ 233.30\,i' + \ 424.67\,\kappa \\
0 &= -\ 33.68 - \ 18.04\,y + 101.45\,y' - \ 11.18\,y'' + \ 506.75\,i' + \ 528.28\,\kappa \\
0 &= +\ 19.03 - \ 14.97\,y - \ 11.18\,y' + \ 82.37\,y'' + \ 277.63\,i' + \ 598.15\,\kappa \\
0 &= -737.22 + 233.30\,y + 506.75\,y' + 277.63\,y'' + 27770.57\,i' + \ 9956.45\,\kappa \\
0 &= +307.32 + 424.67\,y + 528.28\,y' + 598.15\,y'' + \ 9956.45\,i' + 164251.73\,\kappa
\end{aligned}
$$

By eliminating y, y', y'', we obtain from the above equations for i' and κ

$$
\begin{aligned}
0 &= -667.72 + 22669.73\,i' + \ 2619.69\,\kappa \\
0 &= +299.10 + \ 2619.69\,i' + 152854.05\,\kappa
\end{aligned}
\qquad (5)
$$

The solution of which gives

$$i' = +0.029740$$

or $$i = -0.041870$$

and $$\kappa = -0.0024665.$$

After thus assigning to the observations a weight, depending on their zenith distances, the formulæ for Nutation for the beginning of the year 1800 become

$$
\begin{aligned}
\Delta L &= -17''.2828 \sin. \Omega + 0''.20811 \sin. 2\,\Omega - 1''.25651 \sin. 2\,\odot - 0''.20728 \sin. 2\,\mathbb{D} \\
\Delta \omega &= +\ 9.2442 \cos. \Omega - 0.09033 \cos. 2\,\Omega + 0.54544 \cos. 2\,\odot + 0.08998 \cos. 2\,\mathbb{D}\,.
\end{aligned}
$$

and Constant of Aberration $= 20''.2050$.

If we substitute the value of i' just found in the final equation deduced from the observations made at Kew, we have

$$0 = +2.396 + 8838.85\,\kappa$$

and hence $$\kappa = -0.0002711$$

or the value of Constant of Aberration $= 20''.2495$.

In order to combine both the above series of observations, it is only necessary to inquire what is the *mean error* of the Kew observations, which were made with a different instrument from that used at Wansted.

Assuming $i' = +0.029740$, I find the sum of the squares of the errors of sixty-four observations at Kew $= 18''.22$; and therefore the square of the mean error of one observation $= 0''.2847$. But the square of the mean error (α) of a star observed in the zenith of Wansted, with the instrument Bradley used there, was found to be $= 0.6121$; it follows therefore that the larger instrument at Kew gave much more exact results than the one at Wansted. We shall make equat. (4), which depends on the Kew observations, comparable with equat. (5), by multiplying the former by

$$\frac{\alpha}{\epsilon\epsilon} = \frac{0.6121}{0.2847} = 2.150$$

whence they become

$$
\begin{aligned}
0 &= +28.01 + 112.64\,i' + \ 689.40\,\kappa \\
0 &= -15.35 + 689.40\,i' + 19003.53\,\kappa
\end{aligned}
$$

which when added to equat. (5) make the sums

$$0 = -639.71 + 22782.37\, i' + 3309.09\, \kappa$$
$$0 = +274.75 + 3309.09\, i' + 171857.58\, \kappa$$

By solving which we have

$$i' = +0.028391$$

or

$$i = -0.043123$$
$$\kappa = -0.0021454$$

and the formulæ for Nutation for the beginning of 1800 become

$$\Delta L = -17''.2600 \sin. \Omega + 0''.20784 \sin. 2\Omega - 1''.26011 \sin. 2\odot - 0''.20701 \sin. 2\mathbb{D}$$
$$\Delta \omega = +\ 9.2320 \cos. \Omega - 0.09022 \cos. 2\Omega + 0.54700 \cos. 2.\odot + 0.08986 \cos. 2\mathbb{D}$$

and Constant of Aberration $= 20''.2116$.

The weight of $i' =$ 22718.40

That of $\kappa =$ 171376.89

The mean error therefore of

$$i' = \pm\sqrt{\frac{0.6121}{22718.40}} = \pm 0.0051906$$

and of

$$\kappa = \pm\sqrt{\frac{0.6121}{171376.89}} = \pm 0.0018899$$

and their effect on the computation of the coefficient of cos. Ω in the expression for $\Delta\omega = \pm 0''.0466$, and on the Constant of Aberration $= \pm 0''.0383$; whence we may estimate the accuracy, with which the quantities sought have been determined from Bradley's observations.

This last determination, which rests on the hypothesis of the value of the observations depending on the zenith distance, is undoubtedly to be preferred to that given in sect. III, which depends on the equal value of observations at all distances from the zenith. I consider it therefore as the most probable result, which can be deduced from the observations of Bradley made at Kew and Wansted.

In order, however, to shew the results given by the observed stars separately both for Nutation and Aberration, I here insert the last two of the equations, for each star, given in sect. III., after substituting for the value of

$$y = -0.1692$$
$$y' = +0.1303$$
$$y'' = -0.3264$$

and moreover in the last equation but one making $\kappa = -0.0021454$, and in the last $i' = +0.028391$.

	0=	0=
α Aurigæ	−182.261+ 3448.57 i′	+489.093+ 9102.44 κ
ψ Ursæ maj.	+ 13.213+ 24.08 i′	−143.041+ 1567.37 κ
ι Herculis	− 14.296+ 134.42 i′	+ 34.997+14064.54 κ
δ Persei	+ 5.160+ 30.57 i′	− 70.650+ 2171.78 κ
α ——	− 90.270+ 1027.25 i′	+101.183+ 5095.97 κ
46 Aurigæ	+ 1.725+ 23.77 i′	+ 41.822+ 870.40 κ
η Ursæ maj.	−213.295+ 2540.43 i′	−184.016+22925.35 κ
9 Aurigæ	− 11.087+ 269.33 i′	− 33.355+ 604.98 κ
γ Draconis	−603.290+10129.44 i′	+262.279+55234.92 κ
35 Camelopardi	− 7.212+ 827.23 i′	+ 32.049+ 2226.71 κ
τ Persei	− 71.004+ 981.96 i′	− 86.506+ 4279.83 κ
γ ——	+ 32.697+ 1637.95 i′	+ 25.906+ 2359.82 κ
β Draconis	+160.504+ 8661.01 i′	−853.320+45325.52 κ
λ Cassiopeæ	− 15.897+ 281.07 i′	+ 4.698+ 769.24 κ
δ Aurigæ	−157.270+ 974.17 i′	+207.797+ 2854.75 κ
α Cassiopeæ	− 72.562+ 538.87 i′	−298.565+16700.98 κ
γ Ursæ maj.	+ 27.141+ 527.17 i′	+167.407+ 8327.54 κ
ζ ——	+248.875+ 2564.44 i′	+743.417+18971.72 κ
ξ Draconis	+ 18.974+ 181.72 i′	−349.898+10157.33 κ
18 Camelopardi	− 41.825+ 866.25 i′	+129.447+ 2878.56 κ
ε Ursæ maj.	+ 63.996+ 1879.93 i′	+653.726+19430.69 κ
β Cassiopeæ	+ 11.863+ 587.88 i′	+777.946+18034.92 κ
β Ursæ maj.	− 3.024+ 182.47 i′	+ 10.206+ 5318.71 κ

The observations at Kew give besides for γ Draconis

$$0 = +12.342 + 52.39\, i'$$
$$0 = + 1.964 + 8838.85\, \kappa$$

If we multiply the equations, depending on the Wansted observations, by the value of $\frac{\alpha}{\epsilon\epsilon}$ given in this section, and those depending on the Kew observations by $\frac{\alpha}{\epsilon\epsilon} = 2.150$, in order to reduce them to the same weight as observations made in the zenith of Wansted, and if we combine the observations of γ Draconis made at both places; then the above equations are changed into the following:

	0=	0=
α Aurigæ	− 68.899+ 1303.62 i′	+184.883+ 3441.07 κ
ψ Ursæ maj.	+ 5.149+ 9.38 i′	− 55.746+ 610.83 κ
ι Herculis	− 5.697+ 53.57 i′	+ 13.947+ 5605.00 κ
δ Persei	+ 2.243+ 13.29 i′	− 30.715+ 944.18 κ
α ——	− 51.950+ 591.20 i′	+ 58.231+ 2932.80 κ
46 Aurigæ	+ 1.084+ 14.94 i′	+ 26.288+ 547.11 κ
η Ursæ maj.	−173.864+ 2070.76 i′	−150.000+18686.99 κ
9 Aurigæ	− 10.263+ 249.32 i′	− 30.877+ 560.03 κ
γ Draconis	−568.365+10101.39 i′	+262.853+73469.83 κ
35 Camelopardi	− 7.112+ 815.78 i′	+ 31.694+ 2195.75 κ
τ Persei	− 68.107+ 941.90 i′	− 82.978+ 4105.18 κ
γ ——	+ 25.757+ 1290.30 i′	+ 20.408+ 1859.00 κ
β Draconis	+124.140+ 6698.67 i′	−659.983+35056.70 κ
λ Cassiopeæ	− 10.808+ 191.10 i′	+ 3.194+ 522.99 κ
δ Aurigæ	− 88.590+ 548.74 i′	+117.046+ 1608.00 κ
α Cassiopeæ	− 36.067+ 267.85 i′	+148.403+ 8301.20 κ
γ Ursæ maj.	+ 13.210+ 256.57 i′	+ 81.480+ 4053.00 κ
ζ ——	+104.537+ 1077.15 i′	+312.264+ 7960.00 κ
ξ Draconis	+ 7.452+ 71.37 i′	−137.420+ 3995.64 κ
18 Camelopardi	− 16.337+ 338.35 i′	+ 50.560+ 1124.32 κ
ε Ursæ maj.	+ 23.808+ 699.37 i′	+243.206+ 7228.67 κ
β Cassiopeæ	+ 4.307+ 213.45 i′	+282.463+ 6548.33 κ
β Ursæ maj.	− 1.080+ 65.14 i′	+ 3.643+ 1898.64 κ

The observations of many of the stars are manifestly so discordant, that it would be uninteresting to inquire into their separate results. The stars possessing the greatest weight are the following:

α Aurigæ, α Persei, η Ursæ maj., γ Draconis, 35 Camelopardi, τ Persei, γ Persei, β Draconis, δ Aurigæ, ζ Ursæ maj., ϵ Ursæ maj.

The results of which are given in the following table:

Names of Stars.	i'	i	Coefficient of cos. Θ.	Mean Errors.
α Aurigæ	+0.052852	−0.020364	+9″.4515	±0.1945
α Persei	+0.087876	+0.012225	9.7660	0.2889
η Ursæ maj.	+0.083962	+0.008582	9.7308	0.1543
γ Draconis	+0.056265	−0.017188	9.4822	0.0699
35 Camelopardi	+0.008718	−0.061429	9.0554	0.2459
τ Persei	+0.072308	−0.002261	9.6263	0.2288
γ ——	−0.019962	−0.088115	8.7980	0.1955
β Draconis	−0.018532	−0.086784	8.8108	0.0858
δ Aurigæ	+0.161441	+0.080673	10.4263	0.2998
ζ Ursæ maj.	−0.097048	−0.159841	8.1057	0.2140
ϵ ——	−0.034042	−0.101215	8.6714	0.2656

In determining the Aberration, individual stars agree better; and it is only ψ Ursæ maj., 9 Aurigæ, λ Cassiopeæ, which possess so little weight as to render it uninteresting to adduce their separate results. The rest give as follows:

Names of Stars.	κ.	Constant of Aberration.	Mean Errors.
α Aurigæ	−0.053731	19″.1667	±0.2702
ι Herculis	−0.002488	20.2046	0.2117
δ Persei	+0.032531	20.9139	0.5158
α ——	−0.019855	19.8528	0.2927
46 Aurigæ	−0.048050	19.2818	0.6776
η Ursæ maj.	+0.008027	20.4176	0.1160
γ Draconis	−0.003577	20.1825	0.0585
35 Camelopardi	−0.014393	19.9635	0.3382
τ Persei	+0.020213	20.6644	0.2474
γ ——	−0.010978	20.0326	0.3676
β Draconis	+0.018826	20.6363	0.0847
δ Aurigæ	−0.072790	18.7806	0.3952
α Cassiopeæ	−0.017877	19.8929	0.1739
γ Ursæ maj.	−0.020103	19.8478	0.2490
ζ ——	−0.039185	19.4613	0.1775
ξ Draconis	+0.034394	20.9571	0.2507
18 Camelopardi	−0.044970	19.3564	0.4727
ϵ Ursæ maj.	−0.033609	19.5742	0.1863
β Cassiopeæ	−0.043135	19.3813	0.1958
β Ursæ maj.	−0.001919	20.2161	0.2295

Hence it may be observed, that out of the eleven stars, from the observations of which the Nutation alone has been deduced, seven give an *increase* and four a *decrease* of the assumed value. So that the majority concur with the result derived from a combination of the whole, viz. in giving an increase.

Furthermore, out of twenty stars, fourteen give a diminution, and six an augmentation, of the assumed Aberration. So here too, the agreement of the majority with the general result is obvious; but the weight, due to the determination of Nutation and Aberration by individual stars, is generally too small to allow of our attaching much importance to the results above given, if taken separately.

In conclusion, I beg once more to remark, that the results obtained do not depend on the hypothesis of the collimation remaining unchanged during the whole period, but only during each of the four periods mentioned in sect. III. And moreover, that the grounds for asserting in the above mentioned place, that the observations of stars, differing 180° in R. A., clear the results from the effect of change in collimation, may be seen in the trifling diminution of the coefficients of i' and κ in both the final equations in sect. III. and IV. after y, y', y'', had been eliminated.

TABLES.

TABLE I.—*Præcession + Proper Motion.*

	λ Cassiopeæ	α Cassiopeæ	τ Persei	α Persei	γ Persei	δ Persei	9 Aurigæ	α Aurigæ	18 Camelop.	δ Aurigæ	35 Camelop.
1727	− 60″.45	− 59″.68	− 46″.78	− 41″.46	− 45″.16	− 37″.82	− 18″.58	− 15″.16	− 12″.49	− 6″.46	− 4″.27
28	− 40.30	− 39.79	− 31.18	− 27.63	− 30.10	− 25.21	− 12.38	− 10.10	− 8.32	− 4.29	− 2.84
29	− 20.15	− 19.89	− 15.59	− 13.81	− 15.05	− 12.60	− 6.18	− 5.04	− 4.15	− 2.14	− 1.41
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	+ 20.15	+ 19.89	+ 15.59	+ 13.81	+ 15.05	+ 12.60	+ 6.18	+ 5.04	+ 4.15	+ 2.14	+ 1.41
32	+ 40.30	+ 39.79	+ 31.16	+ 27.61	+ 30.08	+ 25.19	+ 12.36	+ 10.08	+ 8.30	+ 4.27	+ 2.82
33	+ 60.45	+ 59.68	+ 46.74	+ 41.42	+ 45.12	+ 37.78	+ 18.52	+ 15.10	+ 12.43	+ 6.40	+ 4.21
34	+ 80.59	+ 79.58	+ 62.32	+ 55.21	+ 60.15	+ 50.36	+ 24.68	+ 20.13	+ 16.55	+ 8.51	+ 5.59
35	+ 100.73	+ 99.46	+ 77.88	+ 69.00	+ 75.18	+ 62.94	+ 30.83	+ 25.14	+ 20.67	+ 10.62	+ 6.98
36	+ 120.88	+ 119.36	+ 93.45	+ 82.79	+ 90.19	+ 75.51	+ 36.97	+ 30.15	+ 24.79	+ 12.72	+ 8.35
37	+ 141.03	+ 139.24	+ 109.00	+ 96.57	+ 105.22	+ 88.08	+ 43.11	+ 35.16	+ 28.89	+ 14.81	+ 9.72
38	+ 161.17	+ 159.14	+ 124.56	+ 110.35	+ 120.23	+ 100.64	+ 49.25	+ 40.15	+ 32.99	+ 16.91	+ 11.08
39	+ 181.29	+ 179.02	+ 140.10	+ 124.12	+ 135.24	+ 113.19	+ 55.38	+ 45.15	+ 37.08	+ 18.99	+ 12.44
40	+ 201.46	+ 198.92	+ 155.66	+ 137.89	+ 150.25	+ 125.75	+ 61.50	+ 50.13	+ 41.16	+ 21.06	+ 13.78
41	+ 221.60	+ 218.80	+ 171.21	+ 151.65	+ 165.23	+ 138.30	+ 67.61	+ 55.10	+ 45.24	+ 23.13	+ 15.12
42	+ 241.74	+ 238.69	+ 186.76	+ 165.41	+ 180.23	+ 150.84	+ 73.71	+ 60.08	+ 49.31	+ 25.18	+ 16.46
43	+ 261.89	+ 258.57	+ 202.29	+ 179.16	+ 195.21	+ 163.38	+ 79.82	+ 65.04	+ 53.37	+ 27.24	+ 17.78
44	+ 282.03	+ 278.44	+ 217.82	+ 192.81	+ 210.21	+ 175.91	+ 85.91	+ 70.01	+ 57.42	+ 29.29	+ 19.10
45	+ 302.17	+ 298.34	+ 233.36	+ 206.67	+ 225.18	+ 188.44	+ 92.00	+ 74.96	+ 61.47	+ 31.32	+ 20.42
46	+ 322.31	+ 318.23	+ 248.88	+ 220.41	+ 240.16	+ 200.97	+ 98.08	+ 79.91	+ 65.51	+ 33.35	+ 21.72
47	+ 342.45	+ 338.12	+ 264.40	+ 234.14	+ 255.14	+ 213.49	+ 104.15	+ 84.85	+ 69.54	+ 35.38	+ 23.02

CONTINUATION OF TABLE I.—*Mean Motion for every* 10 *Star-days.*

	λ Cassiopeæ	α Cassiopeæ	τ Persei	α Persei	γ Persei	δ Persei	9 Aurigæ	α Aurigæ	18 Camelop.	δ Aurigæ	35 Camelop.
Jan. 0	+ 0″.00	+ 0″.00	+ 0″.00	+ 0″.00	+ 0″.00	+ 0″.00	+ 0″.00	+ 0″.00	+ 0″.00	+ 0″.00	+ 0″.00
10	0.55	0.54	0.43	0.38	0.41	0.34	0.17	0.14	0.11	0.06	0.04
20	1.10	1.09	0.85	0.75	0.83	0.69	0.34	0.28	0.23	0.12	0.08
30	1.65	1.63	1.28	1.13	1.23	1.03	0.51	0.41	0.34	0.18	0.12
Feb. 9	2.20	2.17	1.70	1.51	1.64	1.38	0.68	0.55	0.45	0.23	0.15
19	2.75	2.72	2.13	1.89	2.05	1.72	0.84	0.69	0.57	0.29	0.19
Mar. 1	3.30	3.26	2.55	2.26	2.47	2.06	1.01	0.83	0.68	0.35	0.23
11	3.85	3.80	2.98	2.64	2.88	2.41	1.18	0.96	0.79	0.41	0.27
21	4.40	4.35	3.40	3.02	3.29	2.75	1.35	1.10	0.91	0.47	0.31
31	4.95	4.89	3.83	3.40	3.70	3.10	1.52	1.24	1.02	0.53	0.35
Apr. 10	5.50	5.43	4.26	3.77	4.11	3.44	1.69	1.38	1.13	0.59	0.39
20	6.05	5.97	4.68	4.15	4.52	3.78	1.86	1.52	1.25	0.64	0.42
30	6.60	6.52	5.11	4.53	4.93	4.13	2.03	1.65	1.36	0.70	0.46
May 10	7.15	7.06	5.53	4.90	5.34	4.47	2.19	1.79	1.47	0.76	0.50
20	7.70	7.61	5.96	5.28	5.75	4.82	2.36	1.93	1.59	0.82	0.54
30	8.25	8.15	6.38	5.66	6.16	5.16	2.53	2.07	1.70	0.88	0.58
June 9	8.80	8.69	6.81	6.04	6.57	5.51	2.70	2.20	1.81	0.94	0.62
19	9.35	9.23	7.23	6.41	6.98	5.85	2.87	2.34	1.93	0.99	0.66
29	9.90	9.78	7.66	6.79	7.39	6.19	3.04	2.48	2.04	1.05	0.69
July 9	10.45	10.32	8.09	7.17	7.81	6.54	3.21	2.62	2.15	1.11	0.73
19	11.00	10.87	8.51	7.54	8.22	6.88	3.38	2.76	2.27	1.17	0.77
29	11.55	11.41	8.94	7.92	8.63	7.22	3.55	2.89	2.38	1.23	0.81
Aug. 8	12.10	11.95	9.36	8.30	9.04	7.57	3.71	3.03	2.50	1.29	0.85
18	12.65	12.49	9.79	8.68	9.45	7.91	3.88	3.17	2.61	1.35	0.89
28	13.20	13.04	10.21	9.05	9.86	8.25	4.05	3.31	2.72	1.40	0.93
Sept. 7	13.75	13.58	10.64	9.43	10.27	8.60	4.22	3.44	2.84	1.46	0.97
17	14.30	14.12	11.06	9.81	10.68	8.94	4.39	3.58	2.95	1.52	1.00
27	14.85	14.67	11.49	10.19	11.09	9.29	4.56	3.72	3.06	1.58	1.04
Oct. 7	15.40	15.21	11.91	10.56	11.50	9.63	4.73	3.86	3.17	1.64	1.08
17	15.95	15.75	12.34	10.94	11.91	9.98	4.89	3.99	3.29	1.70	1.12
27	16.50	16.30	12.77	11.32	12.33	10.32	5.06	4.13	3.40	1.75	1.16
Nov. 6	17.05	16.84	13.19	11.70	12.74	10.67	5.23	4.27	3.52	1.81	1.20
16	17.60	17.38	13.62	12.07	13.15	11.01	5.40	4.41	3.63	1.87	1.24
26	18.15	17.92	14.04	12.45	13.56	11.35	5.57	4.54	3.74	1.93	1.27
Dec. 6	18.70	18.47	14.47	12.83	13.97	11.70	5.74	4.68	3.86	1.99	1.31
16	19.25	19.01	14.89	13.20	14.38	12.04	5.91	4.82	3.97	2.05	1.35
26	19.80	19.55	15.32	13.58	14.79	12.38	6.08	4.96	4.08	2.11	1.39
36	20.35	20.09	15.74	13.95	15.20	12.61	6.25	5.10	4.20	2.16	1.43

TABLE I.—*Præcession + Proper Motion.*

	46 Aurigæ	β Ursæ maj.	ψ Ursæ maj.	γ Ursæ maj.	ε Ursæ maj.	ζ Ursæ maj.	η Ursæ maj.	β Draconis	ι Herculis	ξ Draconis	γ Draconis	β Cassiopeæ
1727	+1.″32	+ 58.″13	+ 57.″97	+ 60.″02	+ 59.″35	+ 57.″25	+ 54.″98	+ 9.″35	+ 7.″35	+ 2.″68	+ 2.″71	− 59.″58
28	+0.89	+ 38.76	+ 38.65	+ 40.01	+ 39.57	+ 38.16	+ 36.65	+ 6.23	+ 4.89	+ 1.78	+ 1.80	− 39.72
29	+0.45	+ 19.38	+ 19.32	+ 20.01	+ 19.78	+ 19.08	+ 18.33	+ 3.11	+ 2.45	+ 0.89	+ 0.90	− 19.86
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	−0.45	− 19.38	− 19.32	− 20.01	− 19.78	− 19.08	− 18.33	− 3.11	− 2.45	− 0.89	− 0.90	+ 19.86
32	−0.91	− 38.76	− 38.65	− 40.01	− 39.57	− 38.16	− 36.65	− 6.23	− 4.89	− 1.78	− 1.80	+ 39.72
33	−1.38	− 58.15	− 57.99	− 60.02	− 59.35	− 57.23	− 54.96	− 9.33	− 7.33	− 2.66	− 2.69	+ 59.58
34	−1.85	− 77.53	− 77.31	− 80.02	− 79.13	− 76.31	− 73.29	−12.44	− 9.76	− 3.55	− 3.58	+ 79.44
35	−2.33	− 96.92	− 96.65	−100.03	− 98.91	− 95.38	− 91.61	−15.55	−12.20	− 4.44	− 4.48	+ 99.30
36	−2.81	−116.31	−115.98	−120.05	−118.68	−114.46	−109.92	−18.65	−14.63	− 5.32	− 5.37	+119.15
37	−3.31	−135.71	−135.31	−140.05	−138.47	−133.63	−128.24	−21.75	−17.07	− 6.20	− 6.26	+139.02
38	−3.81	−155.11	−154.65	−160.06	−158.25	−152.60	−146.55	−24.85	−19.50	− 7.08	− 7.15	+158.87
39	−4.31	−174.49	−173.98	−180.06	−178.03	−171.67	−164.87	−27.95	−21.92	− 7.96	− 8.03	+178.73
40	−4.83	−193.90	−193.32	−200.07	−197.80	−190.74	−183.17	−31.04	−24.35	− 8.83	− 8.91	+198.59
41	−5.35	−213.30	−212.67	−220.09	−217.57	−209.81	−201.49	−34.13	−26.77	− 9.71	− 9.79	+218.45
42	−5.77	−232.70	−232.00	−240.09	−237.35	−228.87	−219.79	−37.23	−29.18	−10.57	−10.66	+238.31
43	−6.41	−252.10	−251.35	−260.10	−257.13	−247.94	−238.10	−40.32	−31.60	−11.45	−11.54	+258.17
44	−6.95	−271.51	−270.68	−280.12	−276.90	−267.00	−256.40	−43.41	−34.02	−12.32	−12.41	+278.03
45	−7.47	−290.91	−290.03	−300.12	−296.66	−286.06	−274.71	−46.49	−36.43	−13.19	−13.28	+297.88
46	−8.05	−310.33	−309.37	−320.14	−316.44	−305.12	−293.00	−49.57	−38.84	−14.07	−14.16	+317.74
47	−8.61	−329.73	−328.72	−340.14	−336.21	−324.18	−311.31	−52.66	−41.25	−14.93	−15.03	+337.60

CONTINUATION OF TABLE I.—*Mean Motion for every* 10 *Star-days.*

	46 Aurigæ	β Ursæ maj.	ψ Ursæ maj.	γ Ursæ maj.	ε Ursæ maj.	ζ Ursæ maj.	η Ursæ maj.	β Draconis	ι Herculis	ξ Draconis	γ Draconis	β Cassiopeæ
Jan. 0	−0.″00	− 0.″00	− 0.″00	− 0.″00	− 0.″00	− 0.″00	− 0.″00	−0.″00	−0.″00	−0.″00	−0.″00	+ 0.″00
10	0.01	0.53	0.53	0.55	0.54	0.52	0.50	0.09	0.07	0.02	0.03	0.54
20	0.03	1.06	1.06	1.09	1.08	1.04	1.00	0.17	0.13	0.05	0.05	1.09
30	0.04	1.59	1.58	1.64	1.62	1.56	1.50	0.26	0.20	0.07	0.07	1.63
Feb. 9	0.05	2.12	2.11	2.19	2.16	2.08	2.00	0.34	0.27	0.10	0.10	2.17
19	0.06	2.65	2.64	2.73	2.70	2.61	2.50	0.43	0.33	0.12	0.12	2.71
Mar. 1	0.07	3.18	3.17	3.28	3.24	3.13	3.00	0.51	0.40	0.15	0.15	3.25
11	0.09	3.71	3.69	3.82	3.78	3.65	3.50	0.60	0.47	0.17	0.17	3.80
21	0.10	4.23	4.22	4.37	4.32	4.17	4.00	0.68	0.53	0.20	0.20	4.34
31	0.11	4.76	4.75	4.92	4.86	4.69	4.50	0.77	0.60	0.22	0.22	4.88
Apr. 10	0.12	5.29	5.28	5.46	5.40	5.21	5.00	0.85	0.67	0.24	0.25	5.42
20	0.14	5.82	5.80	6.01	5.94	5.73	5.50	0.94	0.74	0.27	0.27	5.97
30	0.15	6.35	6.33	6.56	6.48	6.25	6.01	1.02	0.80	0.29	0.30	6.51
May 10	0.16	6.88	6.86	7.10	7.02	6.77	6.51	1.11	0.87	0.32	0.32	7.05
20	0.17	7.41	7.39	7.65	7.56	7.29	7.01	1.19	0.94	0.34	0.34	7.59
30	0.18	7.94	7.91	8.19	8.10	7.81	7.51	1.28	1.00	0.37	0.37	8.13
June 9	0.20	8.47	8.44	8.74	8.64	8.34	8.01	1.36	1.07	0.39	0.39	8.68
19	0.21	9.00	8.97	9.29	9.18	8.86	8.51	1.45	1.14	0.41	0.42	9.22
29	0.22	9.53	9.50	9.83	9.72	9.38	9.01	1.53	1.20	0.44	0.44	9.76
July 9	0.23	10.05	10.03	10.38	10.27	9.90	9.51	1.62	1.27	0.46	0.47	10.30
19	0.25	10.59	10.55	10.93	10.81	10.42	10.01	1.70	1.34	0.49	0.49	10.85
29	0.26	11.12	11.08	11.47	11.35	10.94	10.51	1.79	1.40	0.51	0.52	11.39
Aug. 8	0.27	11.65	11.61	12.02	11.89	11.46	11.01	1.87	1.47	0.54	0.54	11.93
18	0.28	12.17	12.14	12.57	12.43	11.98	11.51	1.96	1.54	0.56	0.57	12.47
28	0.29	12.70	12.66	13.11	12.96	12.50	12.01	2.04	1.60	0.58	0.59	13.01
Sept. 7	0.31	13.23	13.19	13.66	13.51	13.03	12.51	2.13	1.67	0.61	0.62	13.56
17	0.32	13.76	13.72	14.21	14.05	13.55	13.01	2.21	1.74	0.63	0.64	14.10
27	0.33	14.29	14.25	14.75	14.59	14.07	13.51	2.30	1.80	0.66	0.66	14.64
Oct. 7	0.34	14.82	14.78	15.30	15.13	14.59	14.01	2.38	1.87	0.68	0.69	15.19
17	0.36	15.35	15.30	15.84	15.67	15.11	14.51	2.47	1.94	0.71	0.71	15.73
27	0.37	15.88	15.83	16.39	16.21	15.63	15.02	2.55	2.00	0.73	0.74	16.27
Nov. 6	0.38	16.41	16.36	16.94	16.75	16.15	15.52	2.64	2.07	0.75	0.76	16.81
16	0.39	16.94	16.89	17.48	17.29	16.67	16.02	2.72	2.14	0.78	0.79	17.35
26	0.40	17.46	17.41	18.03	17.82	17.19	16.51	2.81	2.20	0.80	0.81	17.89
Dec. 6	0.42	17.99	17.94	18.57	18.37	17.71	17.01	2.89	2.27	0.83	0.84	18.44
16	0.43	18.52	18.47	19.12	18.91	18.24	17.52	2.98	2.34	0.85	0.86	18.98
26	0.44	19.05	18.90	19.67	19.45	18.75	18.02	3.06	2.41	0.88	0.89	19.52
36	0.45	19.58	19.52	20.21	19.99	19.28	18.52	3.15	2.47	0.90	0.91	20.06

TABLE II.—*Lunar Nutation.*

	λ Cassiopeæ	α Cassiopeæ	τ Persei	α Persei	γ Persei	δ Persei	9 Aurigæ	α Aurigæ	18 Camelop.	δ Aurigæ	35 Camelop.
1727 Jan. 0	+0.″064	+0.″386	+5.″084	+5.″986	+5.″400	+6.″498	+8.″198	+8.″354	+8.″505	+8.″748	+8.″783
Apr. 10	+0.668	+0.989	+5.576	+6.428	+5.877	+6.905	+8.424	+8.552	+8.672	+8.843	+8.863
Jul. 19	+1.261	+1.579	+6.019	+6.815	+6.301	+7.253	+8.579	+8.679	+8.767	+8.866	+8.870
Oct. 27	+1.844	+2.156	+6.413	+7.146	+6.674	+7.542	+8.664	+8.735	+8.790	+8.816	+8.805
Dec. 66	+2.417	+2.720	+6.757	+7.421	+6.995	+7.772	+8.680	+8.720	+8.741	+8.693	+8.667
1728 Jan. 0	+2.229	+2.536	+6.647	+7.336	+6.894	+7.701	+8.683	+8.733	+8.765	+8.741	+8.720
Apr. 10	+2.783	+3.086	+6.953	+7.569	+7.176	+7.887	+8.649	+8.669	+8.666	+8.530	+8.532
Jul. 19	+3.314	+3.607	+7.201	+7.739	+7.398	+8.007	+8.544	+8.534	+8.497	+8.276	+8.276
Oct. 27	+3.824	+4.099	+7.390	+7.845	+7.559	+8.061	+8.369	+8.328	+8.258	+7.978	+7.952
Dec. 66	+4.311	+4.563	+7.520	+7.888	+7.659	+8.049	+8.123	+8.052	+7.949	+7.637	+7.559
1729 Jan. 0	+4.155	+4.413	+7.480	+7.883	+7.634	+8.062	+8.213	+8.154	+8.061	+7.772	+7.699
Apr. 10	+4.614	+4.852	+7.571	+7.881	+7.692	+8.005	+7.922	+7.832	+7.706	+7.349	+7.261
Jul. 19	+5.031	+5.248	+7.598	+7.815	+7.686	+7.883	+7.567	+7.447	+7.290	+6.868	+6.767
Oct. 27	+5.408	+5.603	+7.561	+7.684	+7.617	+7.695	+7.148	+7.000	+6.813	+6.329	+6.216
Dec. 66	+5.743	+5.915	+7.460	+7.489	+7.484	+7.442	+6.666	+6.491	+6.275	+5.733	+5.609
1730 Jan. 0	+5.637	+5.816	+7.501	+7.561	+7.536	+7.534	+6.834	+6.668	+6.460	+5.937	+5.818
Apr. 10	+5.942	+6.096	+7.359	+7.323	+7.360	+7.238	+6.313	+6.121	+5.585	+5.306	+5.177
Jul. 19	+6.196	+6.323	+7.156	+7.026	+7.125	+6.884	+5.743	+5.526	+5.264	+4.635	+4.496
Oct. 27	+6.399	+6.498	+6.893	+6.669	+6.830	+6.472	+5.124	+4.884	+4.598	+3.924	+3.776
Dec. 66	+6.550	+6.621	+6.570	+6.253	+6.475	+6.001	+4.455	+4.194	+3.886	+3.172	+3.017
1731 Jan. 0	+6.506	+6.587	+6.685	+6.398	+6.600	+6.165	+4.682	+4.429	+4.127	+3.425	+3.274
Apr. 10	+6.617	+6.666	+6.287	+5.904	+6.168	+5.613	+3.931	+3.657	+3.335	+2.595	+2.438
Jul. 19	+6.680	+6.701	+5.910	+5.445	+5.763	+5.107	+3.260	+2.970	+2.631	+1.863	+1.701
Oct. 27	+6.695	+6.693	+5.556	+5.024	+5.385	+4.647	+2.671	+2.368	+2.017	+1.229	+1.063
Dec. 66	+6.663	+6.642	+5.224	+4.638	+5.034	+4.233	+2.161	+1.851	+1.492	+0.692	+0.525
1732 Jan. 0	+6.669	+6.649	+5.243	+4.660	+5.055	+4.256	+2.188	+1.754	+1.518	+0.719	+0.552
Apr. 10	+6.566	+6.511	+4.615	+3.951	+4.395	+3.487	+1.263	+0.895	+0.570	−0.244	−0.412
Jul. 19	+6.412	+6.325	+3.984	+3.232	+3.736	+2.735	+0.384	+0.053	−0.325	−1.146	−1.313
Oct. 27	+6.207	+6.091	+3.352	+2.541	+3.079	+1.999	−0.450	−0.771	−1.167	−1.987	−2.152
Dec. 66	+5.952	+5.808	+2.717	+1.841	+2.424	+1.279	−1.237	−1.576	−1.957	−2.767	−2.929
1733 Jan. 0	+6.044	+5.909	+2.936	+2.081	+2.651	.....	−0.966	−1.312	−1.686	−2.500	−2.664
Apr. 10	+5.750	+5.588	+2.267	+1.350	+1.962	.....	−1.775	−2.116	−2.493	−3.293	−3.452
Jul. 19	+5.408	+5.221	+1.582	+0.627	+1.260	.....	−2.563	−2.899	−3.273	−4.052	−4.206
Oct. 27	+5.019	+4.808	+0.882	−0.110	+0.546	.....	−3.331	−3.660	−4.027	−4.779	−4.926
Dec. 66	+4.582	+4.348	+0.165	−0.855	−0.181	.....	−4.079	−4.400	−4.754	−5.472	−5.611
1734 Jan. 0	+4.732	+4.506	+0.404	−0.608	+0.061	.....	−3.833	−4.158	−4.516	−5.246	−5.388
Apr. 10	+4.266	+4.019	−0.315	−1.349	−0.667	.....	−4.559	−4.873	−5.217	−5.909	−6.041
Jul. 19	+3.767	+3.501	−1.026	−2.074	−1.384	.....	−5.241	−5.541	−5.868	−6.516	−6.638
Oct. 27	+3.235	+2.952	−1.730	−2.783	−2.091	.....	−5.878	−6.162	−6.469	−7.068	−7.179
Dec. 66	+2.670	+2.370	−2.427	−3.476	−2.788	.....	−6.471	−6.738	−7.021	−7.565	−7.663
1735 Jan. 0	+2.859	+2.566	−2.197	−3.248	−2.558	.....	−6.279	−6.552	−6.845	−7.407	−7.509
Apr. 10	+2.275	+1.968	−2.881	−3.922	−3.240	.....	−6.836	−7.089	−7.356	−7.859	−7.949
Jul. 19	+1.675	+1.359	−3.535	−4.556	−3.888	.....	−7.329	−7.560	−7.800	−8.240	−8.317
Oct. 27	+1.061	+0.737	−4.159	−5.151	−4.504	.....	−7.759	−7.965	−8.177	−8.550	−8.613
Dec. 66	+0.431	+0.103	−4.753	−5.707	−5.086	.....	−8.125	−8.305	−8.486	−8.789	−8.836
1736 Jan. 0	+0.642	+0.315	−4.559	−5.528	−4.897	.....	−8.011	−8.199	−8.392	−8.719	−8.769
Apr. 10	+0.008	−0.321	−5.127	−6.051	−5.450	.....	−8.329	−8.491	−8.651	−8.905	−8.940
Jul. 19	−0.621	−0.949	−5.644	−6.517	−5.951	.....	−8.573	−8.706	−8.833	−9.013	−9.033
Oct. 27	−1.244	−1.568	−6.113	−6.927	−6.400	.....	−8.742	−8.846	−8.938	−9.043	−9.047
Dec. 66	−1.861	−2.180	−6.531	−7.281	−6.798	.....	−8.837	−8.909	−8.966	−8.994	−8.982
1737 Jan. 0	−1.658	−1.979	−6.398	−7.171	−6.673	.....	−8.815	−8.897	−8.966	−9.019	−9.014
Apr. 10	−2.264	−2.578	−6.778	−7.480	−7.030	.....	−8.856	−8.907	−8.940	−8.916	−8.894
Jul. 19	−2.845	−3.148	−7.096	−7.722	−7.323	.....	−8.821	−8.841	−8.838	−8.737	−8.700
Oct. 27	−3.401	−3.691	−7.353	−7.897	−7.552	.....	−8.710	−8.698	−8.660	−8.483	−8.431
Dec. 66	−3.932	−4.205	−7.547	−8.005	−7.717	.....	−8.522	−8.479	−8.405	−8.154	−8.087

TABLE II.—*Lunar Nutation.*

	46 Aurigæ	β Ursæ maj.	ψ Ursæ maj.	γ Ursæ maj.	ε Ursæ maj.	ζ Ursæ maj.	η Ursæ maj.	β Draconis	ι Herculis	ξ Draconis	γ Draconis	β Cassiopeæ
1727 Jan. 0	+8.″860	+3.″399	+3.″073	+1.″385	−1.″030	−2.″207	−3.″088	−8.″652	−8.″711	−8.″812	−8.″818	−0.″789
Apr. 10	+8.885	+2.840	+2.505	+0.789	−1.629	−2.790	−3.652	−8.781	−8.820	−8.876	−8.879	−0.187
Jul. 19	+8.838	+2.262	+1.921	+0.190	−2.210	−3.346	−4.182	−8.837	−8.857	−8.868	−8.867	+0.411
Oct. 27	+8.718	+1.665	+1.322	−0.411	−2.773	−3.875	−4.678	−8.820	−8.821	−8.787	−8.782	+1.007
Dec. 66	+8.526	+1.049	+0.706	−1.013	−3.318	−4.377	−5.139	−8.731	−8.712	−8.634	−8.625	+1.599
1728 Jan. 0	+8.597	+1.254	+0.911	−0.814	−3.140	−4.213	−4.988	−8.768	−8.756	−8.693	−8.685	+1.403
Apr. 10	+8.355	+0.631	+0.290	−1.411	−3.667	−4.691	−5.423	−8.629	−8.598	−8.490	−8.491	+1.987
Jul. 19	+8.047	+0.008	−0.329	−1.993	−4.160	−5.127	−5.810	−8.421	−8.370	−8.219	−8.204	+2.551
Oct. 27	+7.673	−0.617	−0.947	−2.560	−4.621	−5.522	−6.150	−8.143	−8.073	−7.880	−7.824	+3.095
Dec. 66	+7.232	−1.243	−1.563	−3.111	−5.048	−5.875	−6.441	−7.796	−7.707	−7.473	−7.351	+3.619
1729 Jan. 0	+7.387	−1.035	−1.358	−2.930	−4.910	−5.763	−6.350	−7.921	−7.838	−7.618	−7.597	+3.448
Apr. 10	+6.903	−1.656	−1.967	−3.466	−5.310	−6.084	−6.606	−7.529	−7.427	−7.168	−7.143	+3.953
Jul. 19	+6.366	−2.260	−2.556	−3.969	−5.664	−6.354	−6.807	−7.077	−6.958	−6.661	−6.634	+4.422
Oct. 27	+5.775	−2.846	−3.125	−4.441	−5.972	−6.571	−6.952	−6.566	−6.431	−6.099	−6.069	+4.856
Dec. 66	+5.130	−3.414	−3.674	−4.881	−6.233	−6.736	−7.041	−5.995	−5.845	−5.480	−5.448	+5.255
1730 Jan. 0	+5.350	−3.227	−3.494	−4.738	−6.152	−6.688	−7.018	−6.193	−6.047	−5.694	−5.661	+5.126
Apr. 10	+4.676	−3.778	−4.024	−5.152	−6.380	−6.816	−7.068	−5.586	−5.428	−5.043	−5.008	+5.497
Jul. 19	+3.966	−4.295	−4.518	−5.521	−6.553	−6.887	−7.059	−4.937	−4.766	−4.354	−4.317	+5.819
Oct. 27	+3.221	−4.777	−4.976	−5.845	−6.672	−6.901	−6.991	−4.245	−4.063	−3.626	−3.588	+6.094
Dec. 66	+2.440	−5.224	−5.397	−6.124	−6.737	−6.857	−6.864	−3.511	−3.317	−2.860	−2.821	+6.320
1731 Jan. 0	.....	−5.081	.....	−6.037	−6.722	−6.878	−6.914	−3.762	.....	.....	−3.081	+6.251
Apr. 10	.....	−5.518	.....	−6.287	−6.739	−6.777	−6.723	−2.948	.....	.....	−2.237	+6.444
Jul. 19	.....	−5.870	.....	−6.472	−6.719	−6.656	−6.525	−2.228	.....	.....	−1.496	+6.579
Oct. 27	.....	−6.136	.....	−6.593	−6.664	−6.515	−6.319	−1.601	.....	.....	−0.855	+6.656
Dec. 66	.....	−6.317	.....	−6.649	−6.573	−6.354	−6.106	−1.069	.....	.....	−0.316	+6.676
1732 Jan. 0	.....	−6.312	.....	−6.650	−6.582	−6.366	−6.120	−1.097	.....	.....	−0.344	+6.680
Apr. 10	.....	−6.591	.....	−6.706	−6.376	−6.035	−5.696	−0.139	.....	.....	+0.621	+6.670
Jul. 19	.....	−6.796	.....	−6.700	−6.126	−5.671	−5.249	+0.761	.....	.....	+1.522	+6.602
Oct. 27	.....	−6.925	.....	−6.631	−5.833	−5.274	−4.777	+1.604	.....	.....	+2.358	+6.477
Dec. 66	.....	−6.981	.....	−6.500	−5.497	−4.846	−4.282	+2.389	.....	.....	+3.129	+6.295
1733 Jan. 0	.....	−6.967	.....	−6.549	−5.617	−4.997	−4.456	+2.119	.....	.....	+2.864	+6.361
Apr. 10	.....	−6.989	.....	−6.383	−5.243	−4.530	−3.923	+2.919	.....	.....	+3.647	+6.141
Jul. 19	.....	−6.951	.....	−6.162	−4.826	−4.026	−3.359	+3.690	.....	.....	+4.394	+5.869
Oct. 27	.....	−6.853	.....	−5.887	−4.366	−3.487	−2.765	+4.431	.....	.....	+5.104	+5.546
Dec. 66	.....	−6.696	.....	−5.558	−3.864	−2.911	−2.140	+5.142	.....	.....	+5.778	+5.172
1734 Jan. 0	.....	−6.755	.....	−5.673	−4.035	−3.107	−2.351	+4.908	.....	.....	+5.557	+5.302
Apr. 10	.....	−6.557	.....	−5.311	−3.509	−2.512	−1.712	+5.591	.....	.....	+6.198	+4.896
Jul. 19	.....	−6.304	.....	−4.905	−2.955	−1.900	−1.062	+6.220	.....	.....	+6.782	+4.450
Oct. 27	.....	−5.995	.....	−4.455	−2.375	−1.270	−0.401	+6.797	.....	.....	+7.308	+3.964
Dec. 66	.....	−5.630	.....	−3.962	−1.767	−0.622	+0.270	+7.320	.....	.....	+7.777	+3.439
1735 Jan. 0	.....	−5.756	.....	−4.130	−1.971	−0.840	+0.046	+7.151	.....	.....	+7.628	+3.617
Apr. 10	.....	−5.358	.....	−3.612	−1.352	−0.186	+0.717	+7.633	.....	.....	+8.051	+3.070
Jul. 19	.....	−4.916	.....	−3.067	−0.725	+0.464	+1.376	+8.045	.....	.....	+8.402	+2.500
Oct. 27	.....	−4.431	.....	−2.494	−0.091	+1.111	+2.025	+8.388	.....	.....	+8.680	+1.908
Dec. 66	.....	−3.901	.....	−1.894	+0.550	+1.754	+2.662	+8.661	.....	.....	+8.885	+1.294
1736 Jan. 0	.....	−4.081	.....	−2.096	+0.336	+1.540	+2.452	+8.577	.....	.....	+8.825	+1.500
Apr. 10	.....	−3.529	.....	−1.484	+0.975	+2.174	+3.074	+8.799	.....	.....	+8.978	+0.877
Jul. 19	.....	−2.950	.....	−0.864	+1.599	+2.784	+3.665	+8.943	.....	.....	+9.051	+0.252
Oct. 27	.....	−2.346	.....	−0.236	+2.210	+3.370	+4.224	+9.008	.....	.....	+9.046	−0.376
Dec. 66	.....	−1.715	.....	+0.399	+2.806	+3.931	+4.751	+8.996	.....	.....	+8.962	−1.005
1737 Jan. 0	.....	−1.926	.....	+0.188	+2.610	+3.747	+4.580	+9.010	.....	.....	+9.000	−0.797
Apr. 10	.....	−1.285	.....	+0.821	+3.190	+4.285	+5.079	+8.944	.....	.....	+8.862	−1.421
Jul. 19	.....	−0.640	.....	+1.440	+3.737	+4.781	+5.529	+8.801	.....	.....	+8.649	−2.026
Oct. 27	.....	+0.010	.....	+2.046	+4.251	+5.235	+5.931	+8.584	.....	.....	+8.361	−2.614
Dec. 66	.....	+0.664	.....	+2.639	+4.732	+5.647	+6.284	+8.290	.....	.....	+7.999	−3.183

CONTINUATION OF TABLE II.—*Lunar Nutation.*

	λ Cassiopeæ	α Cassiopeæ	τ Persei	α Persei	γ Persei	δ Persei	9 Aurigæ	α Aurigæ	18 Camelop.	δ Aurigæ	35 Camelop.
1738 Jan. 0	−3″.759	−4″.039	−7″.490	−7″.978	−7″.670	.....	−8″.594	−8″.561	−8″.499	−8″.272	−8″.210
Apr. 10	−4.266	−4.528	−7.639	−8.037	−7.789	.....	−8.355	−8.291	−8.193	−7.894	−7.816
Jul. 19	−4.731	−4.973	−7.721	−8.027	−7.840	.....	−8.046	−7.952	−7.820	−7.451	−7.360
Oct. 27	−5.154	−5.375	−7.736	−7.947	−7.822	.....	−7.669	−7.545	−7.380	−6.945	−6.841
Dec. 66	−5.534	−5.732	−7.683	−7.798	−7.736	.....	−7.222	−7.070	−6.873	−6.374	−6.260
1739 Jan. 0	−5.413	−5.618	−7.709	−7.856	−7.773	.....	−7.378	−7.235	−7.050	−6.571	−6.460
Apr. 10	−5.761	−5.991	−7.611	−7.660	−7.641	.....	−6.889	−6.717	−6.501	−5.964	−5.842
Jul. 19	−6.055	−6.209	−7.448	−7.401	−7.446	.....	−6.346	−6.149	−5.904	−5.312	−5.180
Oct. 27	−6.297	−6.423	−7.221	−7.079	−7.187	.....	−5.750	−5.528	−5.258	−4.617	−4.476
Dec. 66	−6.485	−6.583	−6.931	−6.694	−6.865	.....	−5.100	−4.857	−4.563	−3.877	−3.728
1740 Jan. 0	.....	−6.537	−7.035	−6.830	−6.978	.....	−5.322	−5.086	−4.799	−4.127	−3.980
Apr. 10	.....	−6.663	−6.734	−6.440	−6.646	.....	−4.686	−4.430	−4.123	−3.411	−3.258
Jul. 19	.....	−6.720	−6.321	−5.932	−6.201	.....	−3.932	−3.656	−3.329	−2.583	−2.424
Oct. 27	.....	−6.711	−5.798	−5.308	−5.642	.....	−3.057	−2.764	−2.419	−1.643	−1.480
Dec. 66	.....	−6.633	−5.163	−4.566	−4.970	.....	−2.065	−1.753	−1.391	−0.590	−0.424
1741 Jan. 0	.....	−6.628	.....	−4.581	.....	.....	.....	−1.777	.....	−0.615	−0.449
Apr. 10	.....	−6.582	.....	−4.263	.....	.....	.....	−1.352	.....	−0.175	−0.007
Jul. 19	.....	−6.464	.....	−3.801	.....	.....	.....	−0.772	.....	+0.414	+0.582
Oct. 27	.....	−6.275	.....	−3.197	.....	.....	.....	−0.039	.....	+1.152	+1.319
Dec. 66	.....	−6.013	.....	−2.449	.....	.....	.....	+0.848	.....	+2.040	+2.203
1742 Jan. 0	.....	−6.103	.....	−2.682	.....	.....	.....	+0.578	.....	+1.772	+1.936
Apr. 10	.....	−5.817	.....	−1.977	.....	.....	.....	+1.385	.....	+2.569	+2.731
Jul. 19	.....	−5.486	.....	−1.264	.....	.....	.....	+2.171	.....	+3.337	+3.494
Oct. 27	.....	−5.110	.....	−0.542	.....	.....	.....	+2.938	.....	+4.075	+4.226
Dec. 66	.....	−4.688	.....	+0.188	.....	.....	.....	+3.684	.....	+4.783	+4.926
1743 Jan. 0	.....	−4.833	.....	−0.054	.....	.....	.....	+3.438	.....	+4.551	+4.697
Apr. 10	.....	−4.386	.....	+0.674	.....	.....	.....	+4.164	.....	+5.231	+5.369
Jul. 19	.....	−3.908	.....	+1.389	.....	.....	.....	+4.848	.....	+5.861	+5.990
Oct. 27	.....	−3.399	.....	+2.091	.....	.....	.....	+5.489	.....	+6.442	+6.560
Dec. 66	.....	−2.858	.....	+2.781	.....	.....	.....	+6.088	.....	+6.973	+7.080
1744 Jan. 0	.....	−3.041	.....	+2.553	.....	.....	.....	+5.895	.....	+6.802	+6.914
Apr. 10	.....	−2.485	.....	+3.226	.....	.....	.....	+6.461	.....	+7.294	+7.393
Jul. 19	.....	−1.914	.....	+3.867	.....	.....	.....	+6.968	.....	+7.722	+7.808
Oct. 27	.....	−1.328	.....	+4.475	.....	.....	.....	+7.418	.....	+8.085	+8.158
Dec. 66	.....	−0.728	.....	+5.050	.....	.....	.....	+7.809	.....	+8.384	+8.444
1745 Jan. 0	.....	−0.929	.....	+4.863	.....	.....	.....	+7.686	.....	+8.292	+8.357
Apr. 10	.....	−0.325	.....	+5.409	.....	.....	.....	+8.034	.....	+8.545	+8.595
Jul. 19	.....	+0.277	.....	+5.907	.....	.....	.....	+8.313	.....	+8.725	+8.761
Oct. 27	.....	+0.876	.....	+6.356	.....	.....	.....	+8.524	.....	+8.833	+8.855
Dec. 66	.....	+1.473	.....	+6.757	.....	.....	.....	+8.666	.....	+8.869	+8.876
1746 Jan. 0	.....	+1.276	.....	+6.630	.....	.....	.....	+8.627	.....	+8.865	+8.877
Apr. 10	.....	+1.865	.....	+6.993	.....	.....	.....	+8.721	.....	+8.853	+8.849
Jul. 19	.....	+2.435	.....	+7.296	.....	.....	.....	+8.743	.....	+8.768	+8.749
Oct. 27	.....	+2.985	.....	+7.539	.....	.....	.....	+8.693	.....	+8.611	+8.577
Dec. 66	.....	+3.515	.....	+7.723	.....	.....	.....	+8.571	.....	+8.381	+8.333
1747 Jan. 0	.....	+3.342	.....	+7.670	.....	.....	.....	+8.621	.....	+8.466	+8.423
Apr. 10	.....	+3.854	.....	+7.810	.....	.....	.....	+8.451	.....	+8.189	+8.132
Jul. 19	.....	+4.331	.....	+7.886	.....	.....	.....	+8.213	.....	+7.846	+7.776
Oct. 27	.....	+4.773	.....	+7.897	.....	.....	.....	+7.907	.....	+7.439	+7.355
Dec. 66	.....	+5.181	.....	+7.844	.....	.....	.....	+7.533	.....	+6.966	+6.870

Continuation of TABLE II.—*Lunar Nutation.*

	46 Aurigæ	β Ursæ maj.	ψ Ursæ maj.	γ Ursæ maj.	ε Ursæ maj.	δ Ursæ maj.	η Ursæ maj.	β Draconis	ι Herculis	ξ Draconis	γ Draconis	β Cassiopeæ
1738 Jan. 0	.....	+0.″448	.....	+2.″445	+4.″577	+5.″516	+6.″172	+8.″397	.....	.....	+8.″129	−2.″996
Apr. 10	.....	+1.099	.....	+3.022	+5.030	+5.894	+6.488	+8.053	.....	.....	+7.720	−3.546
Jul. 19	.....	+1.733	.....	+3.567	+5.435	+6.217	+6.744	+7.644	.....	.....	+7.248	−4.060
Oct. 27	.....	+2.351	.....	+4.080	+5.791	+6.485	+6.942	+7.169	.....	.....	+6.715	−4.537
Dec. 66	.....	+2.952	.....	+4.561	+6.099	+6.699	+7.080	+6.628	.....	.....	+6.119	−4.978
1739 Jan. 0	.....	+2.755	.....	+4.405	+6.002	+6.634	+7.041	+6.816	.....	.....	+6.324	−4.836
Apr. 10	.....	+3.339	.....	+4.859	+6.274	+6.809	+7.137	+6.236	.....	.....	+5.693	−5.248
Jul. 19	.....	+3.888	.....	+5.266	+6.490	+6.923	+7.171	+5.610	.....	.....	+5.020	−5.610
Oct. 27	.....	+4.402	.....	+5.626	+6.649	+6.977	+7.144	+4.937	.....	.....	+4.305	−5.923
Dec. 66	.....	+4.881	.....	+5.940	+6.752	+6.970	+7.054	+4.217	.....	.....	+3.549	−6.185
1740 Jan. 0	.....	+4.726	.....	+5.841	+6.724	+6.979	+7.091	+4.464	.....	.....	+3.806	−6.103
Apr. 10	.....	+5.161	.....	+6.116	+6.795	+6.947	+6.979	+3.765	.....	.....	+3.076	−6.329
Jul. 19	.....	+5.577	.....	+6.344	+6.791	+6.828	+6.771	+2.952	.....	.....	+2.236	−6.500
Oct. 27	.....	+5.973	.....	+6.525	+6.712	+6.621	+6.468	+2.024	.....	.....	+1.287	−6.618
Dec. 66	.....	+6.350	.....	+6.660	+6.557	+6.326	+6.069	+0.982	.....	.....	+0.229	−6.681
1741 Jan. 0	.....	+6.334	.....	+6.650	+6.556	+6.328	+6.074	+1.009	.....	.....	+0.256	−6.672
Apr. 10	.....	+6.479	.....	+6.692	+6.478	+6.192	+5.894	+0.572	.....	.....	−0.186	−6.684
Jul. 19	.....	+6.616	.....	+6.691	+6.318	+5.958	+5.605	−0.016	.....	.....	−0.775	−6.644
Oct. 27	.....	+6.746	.....	+6.647	+6.077	+5.626	+5.206	−0.755	.....	.....	−1.518	−6.551
Dec. 66	.....	+6.868	.....	+6.561	+5.755	+5.195	+4.697	−1.644	.....	.....	−2.391	−6.405
1742 Jan. 0	.....	+6.841	.....	+6.598	+5.864	+5.335	+4.861	−1.374	.....	.....	−2.125	−6.460
Apr. 10	.....	+6.901	.....	+6.468	+5.523	+4.899	+4.357	−2.177	.....	.....	−2.914	−6.276
Jul. 19	.....	+6.902	.....	+6.285	+5.141	+4.428	+3.822	−2.954	.....	.....	−3.671	−6.042
Oct. 27	.....	+6.847	.....	+6.051	+4.717	+3.922	+3.258	−3.704	.....	.....	−4.395	−5.758
Dec. 66	.....	+6.773	.....	+5.764	+4.252	+3.380	+2.663	−4.427	.....	.....	−5.087	−5.425
1743 Jan. 0	.....	+6.777	.....	+5.865	+4.411	+3.564	+2.864	−4.189	.....	.....	−4.860	−5.542
Apr. 10	.....	+6.626	.....	+5.547	+3.922	+3.003	+2.255	−4.886	.....	.....	−5.523	−5.178
Jul. 19	.....	+6.422	.....	+5.187	+3.406	+2.424	+1.634	−5.537	.....	.....	−6.133	−4.776
Oct. 27	.....	+6.166	.....	+4.785	+2.863	+1.826	+1.001	−6.141	.....	.....	−6.692	−4.336
Dec. 66	.....	+5.857	.....	+4.341	+2.293	+1.210	+0.355	−6.698	.....	.....	−7.198	−3.858
1744 Jan. 0	.....	+5.965	.....	+4.492	+2.486	+1.417	+0.571	−6.517	.....	.....	−7.035	−4.020
Apr. 10	.....	+5.624	.....	+4.024	+1.904	+0.794	−0.076	−7.036	.....	.....	−7.501	−3.521
Jul. 19	.....	+5.240	.....	+3.528	+1.312	+0.170	−0.716	−7.492	.....	.....	−7.901	−2.997
Oct. 27	.....	+4.814	.....	+3.003	+0.710	−0.454	−1.349	−7.886	.....	.....	−8.236	−2.450
Dec. 66	.....	+4.346	.....	+2.451	+0.099	−1.078	−1.975	−8.217	.....	.....	−8.505	−1.878
1745 Jan. 0	.....	+4.506	.....	+2.637	+0.301	−0.871	−1.768	−8.113	.....	.....	−8.423	−2.071
Apr. 10	.....	+4.013	.....	+2.071	−0.311	−1.490	−2.383	−8.399	.....	.....	−8.645	−1.489
Jul. 19	.....	+3.491	.....	+1.492	−0.916	−2.090	−2.974	−8.614	.....	.....	−8.794	−0.900
Oct. 27	.....	+2.942	.....	+0.902	−1.513	−2.674	−3.540	−8.758	.....	.....	−8.872	−0.304
Dec. 66	.....	+2.364	.....	+0.299	−2.102	−3.239	−4.081	−8.831	.....	.....	−8.877	+0.299
1746 Jan. 0	.....	+2.558	.....	+0.500	−1.904	−3.052	−3.903	−8.815	.....	.....	−8.883	+0.099
Apr. 10	.....	+1.966	.....	−0.105	−2.484	−3.601	−4.423	−8.839	.....	.....	−8.839	+0.701
Jul. 19	.....	+1.362	.....	−0.704	−3.038	−4.116	−4.902	−8.791	.....	.....	−8.722	+1.293
Oct. 27	.....	+0.747	.....	−1.298	−3.567	−4.598	−5.341	−8.670	.....	.....	−8.534	+1.875
Dec. 66	.....	+0.119	.....	−1.887	−4.071	−5.046	−5.740	−8.476	.....	.....	−8.273	+2.447
1747 Jan. 0	.....	+0.329	.....	−1.692	−3.907	−4.901	−5.612	−8.549	.....	.....	−8.368	+2.258
Apr. 10	.....	−0.300	.....	−2.272	−4.390	−5.322	−5.982	−8.309	.....	.....	−8.061	+2.816
Jul. 19	.....	−0.923	.....	−2.829	−4.833	−5.697	−6.296	−8.002	.....	.....	−7.691	+3.350
Oct. 27	.....	−1.540	.....	−3.364	−5.237	−6.026	−6.564	−7.628	.....	.....	−7.256	+3.860
Dec. 66	.....	−2.150	.....	−3.877	−5.602	−6.308	−6.777	−7.187	.....	.....	−6.756	+4.346

TABLE III.—*Solar Nutation.*

	λ Cassiopeæ	α Cassiopeæ	τ Persei	α Persei	γ Persei	δ Persei	9 Aurigæ	α Aurigæ	18 Camelop.	δ Aurigæ	35 Camelop.
Jan. 0	+0″.142	+0″.122	−0″.199	−0″.267	−0″.223	−0″.308	−0″.458	−0″.474	−0″.492	−0″.524	−0″.529
10	+0.311	+0.294	−0.008	−0.080	−0.033	−0.125	−0.308	−0.331	−0.356	−0.405	−0.414
20	+0.442	+0.431	+0.184	+0.116	+0.162	+0.072	−0.121	−0.147	−0.175	−0.236	−0.249
30	+0.517	+0.512	+0.352	+0.298	+0.335	+0.261	+0.082	+0.056	+0.027	−0.038	−0.051
Feb. 9	+0.529	+0.532	+0.478	+0.443	+0.467	+0.417	+0.273	+0.251	+0.224	+0.164	+0.152
19	+0.476	+0.485	+0.543	+0.532	+0.540	+0.520	+0.431	+0.414	+0.393	+0.345	+0.335
Mar. 1	+0.365	+0.380	+0.543	+0.558	+0.548	+0.561	+0.536	+0.527	+0.515	+0.484	+0.477
11	+0.211	+0.231	+0.478	+0.515	+0.491	+0.535	+0.575	+0.575	+0.573	+0.564	+0.561
21	+0.033	+0.054	+0.356	+0.412	+0.375	+0.445	+0.547	+0.555	+0.564	+0.576	+0.577
31	−0.148	−0.128	+0.192	+0.261	+0.216	+0.302	+0.454	+0.471	+0.488	+0.521	+0.527
Apr. 10	−0.311	−0.294	+0.008	+0.082	+0.033	+0.126	+0.309	+0.331	+0.356	+0.406	+0.416
20	−0.437	−0.425	−0.176	−0.107	−0.152	−0.064	+0.129	+0.155	+0.183	+0.245	+0.257
30	−0.513	−0.508	−0.339	−0.283	−0.320	−0.245	−0.064	−0.038	−0.008	+0.056	+0.069
May 10	−0.531	−0.533	−0.464	−0.426	−0.452	−0.398	−0.249	−0.226	−0.199	−0.138	−0.125
20	−0.490	−0.498	−0.536	−0.521	−0.532	−0.507	−0.401	−0.388	−0.366	−0.316	−0.304
30	−0.395	−0.409	−0.549	−0.557	−0.553	−0.558	−0.517	−0.506	−0.493	−0.457	−0.449
June 9	−0.256	−0.275	−0.501	−0.533	−0.513	−0.548	−0.571	−0.569	−0.565	−0.549	−0.544
19	−0.090	−0.111	−0.398	−0.450	−0.417	−0.478	−0.563	−0.569	−0.574	−0.580	−0.579
29	+0.086	+0.066	−0.253	−0.318	−0.276	−0.356	−0.493	−0.507	−0.521	−0.547	−0.552
July 9	+0.253	+0.234	−0.079	−0.152	−0.105	−0.195	−0.369	−0.389	−0.412	−0.455	−0.464
19	+0.391	+0.377	+0.103	+0.032	+0.079	−0.013	−0.204	−0.230	−0.257	−0.314	−0.325
29	+0.488	+0.479	+0.274	+0.212	+0.254	+0.171	−0.017	−0.044	−0.074	−0.137	−0.151
Aug. 8	+0.531	+0.529	+0.416	+0.369	+0.411	+0.336	+0.172	+0.147	+0.118	+0.055	+0.041
18	+0.515	+0.520	+0.512	+0.486	+0.504	+0.465	+0.342	+0.322	+0.298	+0.241	+0.229
28	+0.442	+0.453	+0.551	+0.549	+0.551	+0.543	+0.476	+0.461	+0.444	+0.401	+0.392
Sept. 7	+0.319	+0.335	+0.528	+0.551	+0.537	+0.560	+0.556	+0.550	+0.542	+0.517	+0.511
17	+0.158	+0.178	+0.445	+0.489	+0.461	+0.513	+0.574	+0.577	+0.578	+0.575	+0.574
27	−0.021	0.000	+0.311	+0.371	+0.333	+0.406	+0.525	+0.536	+0.548	+0.567	+0.569
Oct. 7	−0.199	−0.180	+0.139	+0.210	+0.164	+0.253	+0.416	+0.434	+0.454	+0.492	+0.499
17	−0.354	−0.339	−0.049	+0.023	−0.025	+0.068	+0.256	+0.280	+0.306	+0.360	+0.371
27	−0.469	−0.458	−0.234	−0.168	−0.212	−0.126	+0.066	+0.091	+0.121	+0.184	+0.197
Nov. 6	−0.527	−0.524	−0.391	−0.340	−0.374	−0.305	−0.133	−0.109	−0.079	−0.015	−0.002
16	−0.521	−0.525	−0.501	−0.471	−0.491	−0.449	−0.318	−0.297	−0.272	−0.213	−0.201
26	−0.452	−0.463	−0.550	−0.545	−0.549	−0.537	−0.464	−0.449	−0.430	−0.386	−0.377
Dec. 6	−0.326	−0.344	−0.531	−0.552	−0.540	−0.560	−0.553	−0.546	−0.538	−0.512	−0.506
16	−0.160	−0.181	−0.447	−0.491	−0.463	−0.514	−0.574	−0.576	−0.578	−0.575	−0.573
26	+0.026	+0.004	−0.307	−0.368	−0.328	−0.404	−0.523	−0.535	−0.546	−0.565	−0.569
36	+0.209	+0.189	−0.129	−0.200	−0.153	−0.243	−0.408	−0.427	−0.447	−0.486	−0.494

TABLE III.—*Solar Nutation.*

	46 Aurigæ	β Ursæ maj.	ψ Ursæ maj.	γ Ursæ maj.	ε Ursæ maj.	δ Ursæ maj.	η Ursæ maj.	β Draconis	ι Herculis	ξ Draconis	γ Draconis	β Cassiopeæ
Jan. 0	−0″.548	−0″.348	−0″.330	−0″.231	−0″.081	−0″.003	+0″.056	+0″.510	+0″.519	+0″.535	+0″.536	+0″.195
10	−0.447	−0.468	−0.456	−0.384	−0.259	−0.189	−0.134	+0.383	+0.396	+0.424	+0.426	+0.355
20	−0.291	−0.531	−0.525	−0.487	−0.405	−0.352	−0.308	+0.208	+0.224	+0.260	+0.263	+0.470
30	−0.100	−0.527	−0.530	−0.531	−0.500	−0.471	−0.442	+0.008	+0.026	+0.064	+0.069	+0.528
Feb. 9	+0.104	−0.459	−0.469	−0.510	−0.534	−0.531	−0.522	−0.193	−0.176	−0.138	−0.135	+0.520
19	+0.294	−0.334	−0.351	−0.426	−0.502	−0.527	−0.539	−0.368	−0.355	−0.323	−0.320	+0.447
Mar. 1	+0.447	−0.170	−0.191	−0.290	−0.410	−0.458	−0.489	−0.499	−0.491	−0.469	−0.467	+0.322
11	+0.546	+0.014	−0.009	−0.121	−0.268	−0.335	−0.381	−0.569	−0.566	−0.557	−0.556	+0.159
21	+0.580	+0.196	+0.174	+0.062	−0.096	−0.172	−0.229	−0.571	−0.575	−0.579	−0.580	−0.023
31	+0.545	+0.353	+0.334	+0.237	+0.087	+0.008	−0.050	−0.507	−0.515	−0.533	−0.534	−0.201
Apr. 10	+0.448	+0.468	+0.456	+0.383	+0.258	+0.188	+0.133	−0.384	−0.397	−0.424	−0.427	−0.355
20	+0.299	+0.529	+0.523	+0.484	+0.400	+0.345	+0.300	−0.217	−0.233	−0.269	−0.272	−0.466
30	+0.117	+0.530	+0.532	+0.531	+0.494	+0.462	+0.433	−0.026	−0.044	−0.083	−0.086	−0.525
May 10	−0.077	+0.471	+0.481	+0.516	+0.533	+0.527	+0.515	+0.167	+0.150	+0.112	+0.108	−0.524
20	−0.262	+0.360	+0.376	+0.445	+0.512	+0.533	+0.541	+0.340	+0.326	+0.293	+0.290	−0.465
30	−0.416	+0.209	+0.229	+0.325	+0.435	+0.479	+0.506	+0.474	+0.465	+0.441	+0.438	−0.355
June 9	−0.526	+0.036	+0.058	+0.169	+0.311	+0.373	+0.415	+0.557	+0.553	+0.540	+0.538	−0.205
19	−0.577	−0.141	−0.118	−0.005	+0.151	+0.226	+0.280	+0.578	+0.580	+0.579	+0.579	−0.034
29	−0.565	−0.302	−0.282	−0.178	−0.023	+0.055	+0.114	+0.536	+0.543	+0.556	+0.558	+0.140
July 9	−0.492	−0.430	−0.416	−0.333	−0.196	−0.122	−0.064	+0.436	+0.447	+0.472	+0.474	+0.301
19	−0.364	−0.511	−0.503	−0.450	−0.347	−0.286	−0.236	+0.288	+0.303	+0.337	+0.339	+0.427
29	−0.194	−0.537	−0.536	−0.518	−0.461	−0.419	−0.382	+0.108	+0.125	+0.164	+0.167	+0.507
Aug. 8	−0.007	−0.503	−0.509	−0.530	−0.523	−0.506	−0.486	−0.084	−0.067	−0.028	−0.024	+0.532
18	+0.183	−0.414	−0.428	−0.483	−0.529	−0.537	−0.537	−0.268	−0.253	−0.216	−0.213	+0.498
28	+0.355	−0.278	−0.297	−0.382	−0.475	−0.509	−0.528	−0.422	−0.410	−0.382	−0.380	+0.408
Sept. 7	+0.487	−0.110	−0.132	−0.237	−0.368	−0.423	−0.460	−0.530	−0.523	−0.505	−0.503	+0.271
17	+0.564	+0.071	+0.049	−0.065	−0.217	−0.288	−0.338	−0.573	−0.576	−0.572	−0.571	+0.104
27	+0.577	+0.245	+0.225	+0.116	−0.042	−0.120	−0.177	−0.559	−0.564	−0.572	−0.572	−0.077
Oct. 7	+0.523	+0.392	+0.376	+0.284	+0.140	+0.064	+0.005	−0.475	−0.486	−0.506	−0.508	−0.249
17	+0.407	+0.493	+0.483	+0.420	+0.306	+0.230	+0.188	−0.335	−0.350	−0.381	−0.384	−0.394
27	+0.242	+0.537	+0.533	+0.506	+0.436	+0.390	+0.348	−0.155	−0.171	−0.209	−0.212	−0.492
Nov. 6	+0.046	+0.515	+0.520	+0.532	+0.515	+0.492	+0.469	+0.045	+0.028	−0.011	−0.015	−0.532
16	−0.155	+0.432	+0.444	+0.493	+0.532	+0.536	+0.533	+0.241	+0.226	+0.189	+0.186	−0.506
26	−0.338	+0.294	+0.302	+0.395	+0.483	+0.515	+0.532	+0.408	+0.395	+0.366	+0.363	−0.419
Dec. 6	−0.480	+0.121	+0.142	+0.247	+0.375	+0.430	+0.465	+0.525	+0.518	+0.499	+0.497	−0.280
16	−0.563	−0.068	−0.046	+0.067	+0.220	+0.291	+0.340	+0.577	+0.576	+0.571	+0.570	−0.107
26	−0.576	−0.249	−0.229	−0.121	+0.037	+0.116	+0.173	+0.557	+0.563	+0.572	+0.572	+0.082
36	−0.517	−0.399	−0.383	−0.293	−0.150	−0.074	−0.015	+0.469	+0.497	+0.501	+0.503	+0.259

TABLE IV.—*Aberration.*

	λ Cassiopeæ			α Cassiopeæ			τ Persei			α Persei			γ Persei		
	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.
Jan. 0	+15″.234	−122	+17	+15″.734	−114	+14	+12″.903	+ 39	−16	+11″.219	+ 53	−22	+12″.702	+ 45	−17
10	+13.846	−160	+24	+14.467	−149	+22	+13.037	− 7	− 8	+11.556	+ 16	−16	+12.965	+ 6	− 7
20	+12.026	−201	+30	+12.750	−191	+28	+12.762	− 47	+ 1	+11.530	− 21	− 8	+12.822	− 34	+ 3
30	+ 9.835	−234	+35	+10.638	−227	+33	+12.090	− 86	+10	+11.145	− 56	− 2	+12.278	− 73	+13
Feb. 9	+ 7.345	−260	+38	+ 8.202	−256	+37	+11.044	−121	+18	+10.412	− 89	+ 7	+11.356	−110	+24
19	+ 4.638	−277	+41	+ 5.522	−276	+40	+ 9.662	−153	+25	+ 9.366	−119	+13	+10.087	−142	+32
Mar. 1	+ 1.803	−286	+42	+ 2.687	−287	+42	+ 7.992	−179	+32	+ 8.036	−145	+21	+ 8.516	−170	+40
11	− 1.073	−285	+42	− 0.215	−289	+42	+ 6.088	−199	+37	+ 6.471	−166	+26	+ 6.696	−192	+46
21	− 3.902	−276	+41	− 3.095	−283	+41	+ 4.013	−213	+41	+ 4.720	−182	+31	+ 4.684	−202	+52
31	− 6.599	−259	+39	− 5.868	−268	+39	+ 1.831	−220	+44	+ 2.839	−192	+35	+ 2.547	−217	+55
Apr. 10	− 9.087	−235	+35	− 8.453	−246	+36	− 0.392	−221	+46	+ 0.887	−196	+38	+ 0.347	−220	+57
20	−11.299	−205	+30	−10.778	−217	+31	− 2.592	−216	+46	− 1.081	−195	+40	− 1.852	−217	+57
30	−13.177	−169	+25	−12.784	−182	+26	− 4.706	−204	+45	− 3.007	−188	+41	− 3.985	−207	+55
May 10	−14.672	−129	+19	−14.419	−143	+21	− 6.676	−188	+43	− 4.840	−176	+41	− 5.996	−192	+53
20	−15.750	− 86	+13	−15.642	−100	+15	− 8.456	−165	+42	− 6.528	−159	+39	− 7.829	−172	+48
30	−16.384	− 41	+ 6	−16.424	− 55	+ 8	− 9.984	−139	+35	− 8.028	−139	+37	− 9.438	−148	+42
June 9	−16.564	+ 5	0	−16.751	− 10	+ 2	−11.237	−110	+30	− 9.301	−115	+33	−10.781	−119	+35
19	−16.286	+ 50	− 8	−16.614	+ 36	− 5	−12.177	− 77	+24	−10.318	− 87	+29	−11.825	− 88	+28
29	−15.562	+ 94	−14	−16.022	+ 81	−11	−12.782	− 43	+18	−11.048	− 58	+24	−12.543	− 55	+20
July 9	−14.410	+135	−20	−14.988	+124	−18	−13.035	− 7	+10	−11.474	− 27	+17	−12.916	− 20	+11
19	−12.861	+173	−25	−13.543	+163	−23	−12.931	+ 28	+ 3	−11.587	+ 5	+12	−12.934	+ 16	+ 2
29	−10.954	+206	−30	−11.721	+199	−28	−12.472	+ 64	− 3	−11.379	+ 37	+ 5	−12.594	+ 51	− 9
Aug. 8	− 8.739	+234	−34	− 9.570	+229	−32	−11.660	+ 97	−12	−10.855	+ 68	− 2	−11.906	+ 86	−17
18	− 6.273	+256	−37	− 7.145	+253	−35	−10.524	+129	−20	−10.027	+ 97	− 8	−10.883	+113	−26
28	− 3.620	+271	−40	− 4.507	+271	−39	− 9.088	+157	−26	− 8.914	+124	−15	− 9.550	+147	−34
Sept. 7	− 0.852	+279	−41	− 1.731	+281	−40	− 7.386	+184	−32	− 7.543	+148	−21	− 7.939	+173	−42
17	+ 1.955	+279	−41	+ 1.109	+283	−40	− 5.469	+201	−35	− 5.948	+169	−27	− 6.093	+194	−47
27	+ 4.720	+270	−40	+ 3.934	+277	−40	− 3.374	+215	−41	− 4.172	+184	−32	− 4.061	+210	−52
Oct. 7	+ 7.364	+254	−38	+ 6.658	+263	−38	− 1.172	+223	−45	− 2.264	+195	−36	− 1.897	+220	−55
17	+ 9.802	+230	−34	+ 9.202	+241	−35	+ 1.077	+224	−47	− 0.278	+200	−39	+ 0.335	+223	−57
27	+11.962	+198	−29	+11.483	+211	−31	+ 3.306	+218	−47	+ 1.728	+198	−41	+ 2.570	+220	−57
Nov. 6	+13.770	+160	−24	+13.428	+174	−26	+ 5.446	+206	−46	+ 3.691	+196	−42	+ 4.738	+210	−56
16	+15.166	+117	−18	+14.972	+132	−20	+ 7.431	+187	−44	+ 5.551	+178	−41	+ 6.771	+193	−52
26	+16.100	+ 68	−11	+16.060	+ 84	−13	+ 9.192	+162	−39	+ 7.247	+159	−39	+ 8.604	+170	−47
Dec. 6	+16.535	+ 18	− 3	+16.653	+ 33	− 6	+10.676	+132	−34	+ 8.723	+134	−36	+10.175	+141	−40
16	+16.456	− 34	+ 5	+16.727	− 19	+ 2	+11.829	+ 95	−26	+ 9.932	+105	−32	+11.433	+108	−32
26	+15.860	− 84	+13	+16.277	− 76	+ 9	+12.572	+ 57	−21	+10.829	+ 74	−26	+12.334	+ 76	−23
36	+14.767	−133	+19	+15.314	−138	+17	+12.976	+ 18	−13	+11.389	+ 42	−21	+12.848	+ 45	−14

Continuation of TABLE IV.—*Aberration.*

	δ Persei			9 Aurigæ			α Aurigæ			18 Camelop.			δ Aurigæ			35 Camelop.		
	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.
Jan. 0	+10.″048	+ 58	−25	+ 6.″471	+137	−46	+5.″138	+115	−42	+ 5.″544	+179	−48	+ 3.″396	+172	−59	+2.″809	+158	−54
10	+10.476	+ 26	−18	+ 7.720	+113	−40	+6.181	+ 95	−38	+ 7.223	+156	−44	+ 5.081	+160	−56	+4.375	+150	−49
20	+10.576	− 7	−11	+ 8.727	+ 87	−34	+7.030	+ 74	−33	+ 8.672	+131	−38	+ 6.604	+142	−51	+5.803	+134	−43
30	+10.344	− 39	− 3	+ 9.458	+ 58	−25	+7.658	+ 52	−27	+ 9.848	+104	−32	+ 7.918	+119	−45	+7.047	+113	−36
Feb. 9	+ 9.793	− 70	+ 5	+ 9.894	+ 28	−16	+8.046	+ 26	−20	+10.714	+ 70	−24	+ 8.982	+ 92	−38	+8.068	+ 90	−27
19	+ 8.941	− 98	+13	+10.024	− 2	− 7	+8.184	+ 1	−13	+11.248	+ 36	−16	+ 9.766	+ 63	−29	+8.837	+ 63	−18
Mar. 1	+ 7.821	−124	+20	+ 9.846	− 33	+ 3	+8.072	− 23	− 5	+11.436	+ 1	− 8	+10.247	+ 33	−19	+9.333	+ 35	− 9
11	+ 6.470	−144	+26	+ 9.372	− 61	+13	+7.717	− 47	+ 3	+11.276	− 33	+ 2	+10.417	0	−10	+9.543	+ 7	+ 2
21	+ 4.934	−161	+31	+ 8.621	− 88	+21	+7.132	− 69	+11	+10.780	− 65	+11	+10.273	− 30	+ 1	+9.468	− 22	+11
31	+ 3.260	−172	+36	+ 7.618	−111	+29	+6.341	− 88	+18	+ 9.969	− 96	+19	+ 9.827	− 59	+11	+9.113	− 49	+20
Apr. 10	+ 1.500	−178	+39	+ 6.399	−131	+37	+5.367	−105	+25	+ 8.870	−122	+27	+ 9.097	− 86	+20	+8.493	− 74	+28
20	− 0.294	−178	+41	+ 5.002	−147	+42	+4.244	−118	+31	+ 7.522	−145	+33	+ 8.107	−110	+29	+7.631	− 97	+36
30	− 2.069	−174	+42	+ 3.468	−158	+47	+3.007	−128	+36	+ 5.965	−164	+39	+ 6.891	−131	+37	+6.556	−117	+43
May 10	− 3.779	−165	+43	+ 1.844	−165	+51	+1.690	−134	+39	+ 4.247	−177	+44	+ 5.486	−148	+44	+5.301	−133	+47
20	− 5.373	−152	+41	+ 0.176	−167	+52	+0.331	−136	+42	+ 2.417	−186	+47	+ 3.933	−161	+49	+3.902	−145	+51
30	− 6.814	−134	+39	− 1.492	−164	+53	−1.032	−135	+44	+ 0.527	−190	+49	+ 2.274	−169	+54	+2.398	−153	+54
June 9	− 8.061	−114	+35	− 3.113	−157	+52	−2.363	−130	+44	− 1.373	−188	+50	+ 0.560	−172	+56	+0.834	−157	+55
19	− 9.084	− 90	+31	− 4.646	−147	+49	−3.626	−121	+43	− 3.232	−181	+49	− 1.169	−171	+58	−0.750	−157	+59
29	− 9.856	− 63	+26	− 6.050	−132	+46	−4.788	−110	+41	− 4.999	−170	+47	− 2.862	−165	+57	−2.314	−153	+52
July 9	−10.352	− 36	+20	− 7.287	−114	+41	−5.818	− 95	+38	− 6.629	−154	+44	− 4.477	−155	+55	−3.812	−145	+49
19	−10.573	− 7	+13	− 8.325	− 92	+35	−6.690	− 78	+34	− 8.078	−134	+40	− 5.970	−141	+52	−5.207	−133	+44
29	−10.499	+ 22	+ 7	− 9.135	− 68	+29	−7.378	− 59	+29	− 9.307	−110	+34	− 7.301	−123	+47	−6.462	−117	+38
Aug. 8	−10.133	+ 51	0	− 9.693	− 42	+20	−7.864	− 38	+24	−10.280	− 83	+27	− 8.433	−102	+41	−7.540	− 97	+31
18	− 9.484	+ 78	− 7	− 9.983	− 15	+12	−8.131	− 15	+17	−10.971	− 54	+20	− 9.334	− 77	+34	−8.411	− 75	+23
28	− 8.565	+104	−14	− 9.994	+ 14	+ 3	−8.172	+ 8	+10	−11.356	− 22	+12	− 9.976	− 50	+25	−9.049	− 51	+14
Sept. 7	− 7.399	+128	−21	− 9.722	+ 41	− 6	−7.981	+ 31	+ 2	−11.420	+ 10	+ 4	−10.338	− 22	+16	−9.434	− 25	+ 5
17	− 6.015	+148	−26	− 9.169	+ 69	−15	−7.560	+ 53	− 5	−11.158	+ 42	− 5	−10.406	+ 8	+ 7	−9.550	+ 2	− 4
27	− 4.449	+164	−32	− 8.347	+ 95	−24	−6.917	+ 75	−13	−10.571	+ 74	−13	−10.172	+ 38	− 4	−9.391	+ 30	−14
Oct. 7	− 2.743	+175	−37	− 7.277	+118	−32	−6.069	+ 94	−20	− 9.671	+105	−21	− 9.639	+ 68	−14	−8.949	+ 57	−26
17	− 0.947	+182	−40	− 5.985	+139	−38	−5.035	+111	−27	− 8.480	+132	−29	− 8.817	+ 96	−23	−8.252	+ 83	−31
27	+ 0.887	+183	−42	− 4.506	+155	−44	−3.845	+125	−33	− 7.026	+156	−36	− 7.727	+121	−32	−7.297	+107	−38
Nov. 6	+ 2.705	+178	−43	− 2.883	+167	−49	−2.532	+135	−38	− 5.353	+176	−42	− 6.397	+143	−41	−6.116	+128	−45
16	+ 4.449	+168	−43	− 1.163	+174	−53	−1.137	+142	−41	− 3.508	+190	−47	− 4.864	+161	−48	−4.739	+145	−52
26	+ 6.061	+152	−41	+ 0.599	+176	−55	+0.300	+144	−44	− 1.548	+198	−50	− 3.176	+174	−53	−3.217	+158	−54
Dec. 6	+ 7.495	+132	−40	+ 2.348	+171	−54	+1.733	+142	−45	+ 0.468	+201	−52	− 1.382	+182	−57	−1.586	+156	−57
16	+ 8.691	+103	−34	+ 4.028	+162	−53	+3.116	+133	−46	+ 2.474	+197	−52	+ 0.458	+183	−59	+0.098	+158	−56
26	+ 9.564	+ 76	−28	+ 5.585	+147	−49	+4.402	+122	−44	+ 4.405	+186	−50	+ 2.287	+179	−60	+1.781	+156	−55
36	+10.203	+ 52	−22	+ 6.966	+125	−44	+5.550	+105	−40	+ 6.198	+168	−47	+ 4.045	+172	−58	+3.410	+145	−52

Continuation of TABLE IV.—*Aberration.*

	46 Aurigæ			β Ursæ maj.			ψ Ursæ maj.			γ Ursæ maj.			ε Ursæ maj.			ζ Ursæ maj.		
	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.
Jan. 0	+1.″277	+154	−52	−15.″865	+ 60	−14	−14.″074	+ 11	− 3	−16.″876	− 5	0	−17.″783	− 75	+10	−17.″349	−121	+17
10	+2.804	+148	−50	−14.988	+111	−23	−13.742	+ 55	− 9	−16.664	+ 47	− 7	−18.235	− 17	+ 2	−18.246	− 59	+12
20	+4.240	+137	−46	−13.643	+156	−31	−12.981	+ 96	−14	−15.929	+ 98	−15	−18.117	+ 40	− 6	−18.525	+ 1	+ 6
30	+5.541	+121	−40	−11.875	+195	−38	−11.816	+135	−19	−14.699	+146	−22	−17.432	+ 95	−14	−18.227	+ 58	+ 2
Feb. 9	+6.667	+102	−34	− 9.743	+228	−44	−10.289	+168	−22	−13.017	+188	−28	−16.209	+147	−21	−17.363	+113	− 4
19	+7.583	+ 80	−26	− 7.320	+253	−48	− 8.449	+196	−26	−10.939	+224	−33	−14.491	+194	−28	−15.967	+164	− 9
Mar. 1	+8.262	+ 55	−17	− 4.685	+270	−50	− 6.360	+218	−29	− 8.538	+252	−37	−12.339	+233	−34	−14.090	+209	−14
11	+8.689	+ 30	− 8	− 1.921	+279	−52	− 4.090	+233	−30	− 5.891	+273	−40	− 9.824	+266	−38	−11.797	+246	−17
21	+8.854	+ 3	+ 1	+ 0.885	+279	−51	− 1.709	+240	−31	− 3.082	+285	−41	− 7.029	+289	−41	− 9.163	+276	−21
31	+8.756	− 23	+ 9	+ 3.649	+270	−49	+ 0.708	+240	−31	− 0.198	+288	−41	− 4.043	+304	−43	− 6.275	+297	−23
Apr. 10	+8.403	− 47	+18	+ 6.291	+254	−46	+ 3.091	+233	−29	+ 2.677	+283	−41	− 0.955	+309	−44	− 3.218	+310	−26
20	+7.808	− 70	+26	+ 8.736	+231	−41	+ 5.372	+220	−26	+ 5.456	+269	−38	+ 2.143	+306	−43	− 0.085	+313	−27
30	+6.994	− 91	+33	+10.919	+202	−35	+ 7.486	+200	−24	+ 8.066	+249	−36	+ 5.164	+294	−42	+ 3.032	+307	−27
May 10	+5.985	−109	+39	+12.782	+168	−29	+ 9.379	+176	−21	+10.436	+222	−32	+ 8.024	+274	−38	+ 6.051	+293	−27
20	+4.813	−124	+44	+14.278	+130	−21	+11.001	+147	−18	+12.501	+189	−27	+10.646	+247	−34	+ 8.886	+271	−26
30	+3.510	−135	+48	+15.372	+ 88	−14	+12.310	+114	−13	+14.212	+151	−21	+12.963	+213	−29	+11.463	+242	−24
June 9	+2.115	−142	+50	+16.036	+ 44	− 5	+13.275	+ 78	− 9	+15.524	+110	−16	+14.915	+174	−24	+13.716	+206	−22
19	+0.664	−146	+51	+16.258	0	+ 3	+13.872	+ 41	− 4	+16.406	+ 66	− 9	+16.451	+131	−18	+15.587	+166	−20
29	−0.804	−146	+52	+16.033	− 44	+12	+14.087	+ 2	+ 2	+16.836	+ 20	− 2	+17.534	+ 84	−11	+17.027	+121	−16
July 9	−2.250	−142	+49	+15.376	− 88	+19	+13.916	− 36	+ 6	+16.804	− 26	+ 4	+18.135	+ 35	− 5	+17.999	+ 72	−13
19	−3.635	−134	+46	+14.278	−129	+27	+13.361	− 74	+11	+16.309	− 72	+11	+18.239	− 15	+ 3	+18.476	+ 22	− 8
29	−4.923	−122	+42	+12.793	−166	+33	+12.438	−110	+15	+15.364	−116	+17	+17.838	− 65	+10	+18.445	− 29	− 4
Aug. 8	−6.075	−107	+36	+10.951	−200	+38	+11.166	−143	+19	+13.990	−157	+23	+16.943	−113	+16	+17.903	− 79	+ 1
18	−7.063	− 89	+29	+ 8.796	−228	+43	+ 9.579	−172	+23	+12.221	−194	+28	+15.571	−159	+23	+16.860	−128	+ 5
28	−7.857	− 68	+22	+ 6.385	−251	+47	+ 7.717	−198	+26	+10.102	−227	+33	+13.757	−201	+29	+15.338	−174	+10
Sept. 7	−8.432	− 46	+14	+ 3.782	−266	+49	+ 5.627	−218	+28	+ 7.687	−253	+36	+11.543	−238	+34	+13.375	−216	+14
17	−8.768	− 21	+ 6	+ 1.057	−275	+51	+ 3.364	−232	+30	+ 5.038	−273	+39	+ 8.988	−269	+38	+11.017	−252	+18
27	−8.852	+ 5	− 3	− 1.714	−275	+50	+ 0.992	−239	+31	+ 2.229	−285	+41	+ 6.158	−298	+41	+ 8.328	−282	+22
Oct. 7	−8.677	+ 30	−12	− 4.451	−268	+48	− 1.423	−240	+31	− 0.661	−289	+41	+ 3.133	−308	+43	+ 5.379	−304	+24
17	−8.244	+ 56	−21	− 7.070	−252	+45	− 3.809	−234	+29	− 3.548	−284	+40	− 0.005	−315	+44	+ 2.255	−317	+27
27	−7.561	+ 80	−29	− 9.493	−229	+42	− 6.095	−220	+28	− 6.346	−272	+39	− 3.159	−311	+44	− 0.955	−320	+28
Nov. 6	−6.646	+102	−35	−11.641	−197	+35	− 8.207	−199	+24	− 8.965	−249	+36	− 6.233	−299	+42	− 4.153	−314	+29
16	−5.523	+121	−42	−13.442	−160	+27	−10.079	−172	+21	−11.322	−219	+31	− 9.132	−276	+39	− 7.238	−298	+28
26	−4.224	+137	−47	−14.836	−117	+19	−11.647	−139	+17	−13.340	−181	+26	−11.760	−245	+34	−10.114	−272	+27
Dec. 6	−2.791	+148	−50	−15.774	− 69	+11	−12.859	−101	+12	−14.949	−138	+19	−14.033	−206	+30	−12.684	−238	+26
16	−1.267	+155	−52	−16.221	− 19	+ 1	−13.671	− 60	+ 6	−16.096	− 90	+13	−15.871	−159	+22	−14.865	−195	+23
26	+0.300	+156	−53	−16.161	+ 32	− 8	−14.058	− 17	+ 1	−16.740	− 38	+ 5	−17.216	−107	+15	−16.583	−146	+19
36	+1.858	+149	−52	−15.589	+ 79	−19	−14.001	+ 27	− 5	−16.859	+ 18	− 2	−18.019	− 51	+ 7	−17.780	− 94	+15

CONTINUATION OF TABLE IV.—*Aberration.*

	η Ursæ maj.			β Draconis			ι Herculis			ξ Draconis			γ Draconis			β Cassiopeæ		
	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.	1730		Variation in 10 yrs.
Jan. 0	−15″.992	−152	+18	− 5″.853	−350	+ 4	− 5″.066	−342	+20	− 4″.297	−343	+15	− 4″.077	−338	+18	+16″.033	−132	+18
10	−17.211	− 95	+10	− 9.066	−307	− 2	− 8.215	−302	+19	− 7.672	−325	+14	− 7.393	−320	+17	+14.443	−181	+26
20	−17.890	− 40	+ 4	−11.993	−274	− 7	−11.103	−271	+18	−10.800	−296	+12	−10.472	−291	+16	+12.404	−223	+32
30	−18.009	+ 16	− 3	−14.537	−232	−13	−13.638	−232	+16	−13.586	−257	+11	−13.218	−253	+14	+ 9.982	−257	+36
Feb. 9	−17.568	+ 71	−11	−16.623	−183	−19	−15.742	−186	+13	−15.943	−211	+ 9	−15.546	−208	+11	+ 7.257	−283	+40
19	−16.589	+123	−16	−18.190	−129	−23	−17.354	−134	+10	−17.797	−158	+ 7	−17.385	−157	+ 8	+ 4.320	−300	+42
Mar. 1	−15.106	+171	−23	−19.193	− 71	−26	−18.427	− 79	+ 7	−19.100	−101	+ 5	−18.686	−102	+ 6	+ 1.264	−306	+43
11	−13.176	+212	−27	−19.611	− 12	−29	−18.938	− 23	+ 3	−19.820	− 42	+ 3	−19.415	− 44	+ 3	− 1.815	−304	+43
21	−10.861	+247	−31	−19.440	+ 46	−31	−18.880	+ 34	0	−19.943	+ 17	0	−19.560	+ 15	0	− 4.823	−293	+41
31	− 8.239	+274	−34	−18.696	+102	−32	−18.265	+ 88	− 3	−19.475	+ 75	− 3	−19.124	+ 71	− 3	− 7.671	−273	+38
Apr. 10	− 5.390	+292	−36	−17.409	+153	−32	−17.119	+139	− 6	−18.441	+130	− 4	−18.133	+125	− 6	−10.278	−245	+34
20	− 2.402	+302	−37	−15.627	+200	−30	−15.484	+185	− 9	−16.880	+170	− 6	−16.624	+174	− 8	−12.574	−211	+29
30	+ 0.640	+303	−37	−13.406	+241	−28	−13.416	+225	−11	−14.844	+224	− 8	−14.647	+218	− 9	−14.506	−172	+24
May 10	+ 3.649	+295	−36	−10.817	+274	−25	−10.977	+259	−13	−12.397	+262	− 9	−12.264	+255	−12	−16.007	−128	+19
20	+ 6.542	+280	−33	− 7.936	+299	−21	− 8.241	+285	−15	− 9.614	+291	−10	− 9.548	+284	−13	−17.053	− 81	+11
30	+ 9.243	+257	−30	− 4.844	+316	−17	− 5.284	+303	−16	− 6.572	+313	−11	− 6.575	+306	−14	−17.623	− 33	+ 4
June 9	+11.680	+227	−26	− 1.626	+324	−12	− 2.191	+312	−16	− 3.357	+331	−11	− 3.429	+319	−14	−17.705	+ 16	− 2
19	+13.792	+192	−22	+ 1.631	+323	− 8	+ 0.958	+313	−17	− 0.056	+330	−11	− 0.195	+324	−14	−17.298	+ 64	− 9
29	+15.521	+152	−17	+ 4.839	+314	− 3	+ 4.076	+306	−17	+ 3.243	+325	−11	+ 3.042	+319	−14	−16.417	+111	−15
July 9	+16.824	+107	−12	+ 7.912	+297	+ 4	+ 7.082	+291	−16	+ 6.453	+312	−11	+ 6.194	+307	−13	−15.084	+154	−21
19	+17.665	+ 60	− 6	+10.772	+271	+ 8	+ 9.896	+268	−15	+ 9.487	+292	−10	+ 9.179	+286	−13	−13.335	+193	−27
29	+18.020	+ 11	+ 1	+13.339	+239	+13	+12.442	+238	−14	+12.266	+261	− 9	+11.916	+258	−12	−11.215	+228	−32
Aug. 8	+17.878	− 39	+ 6	+15.544	+199	+17	+14.649	+201	−12	+14.711	+224	− 7	+14.330	+222	−11	− 8.780	+256	−35
18	+17.236	− 89	+12	+17.322	+154	+21	+16.456	+158	−10	+16.755	+181	− 6	+16.351	+180	− 8	− 6.091	+278	−39
28	+16.107	−136	+18	+18.620	+104	+25	+17.807	+110	− 7	+18.336	+132	− 5	+17.922	+132	− 7	− 3.220	+292	−41
Sept. 7	+14.516	−180	+23	+19.397	+ 50	+28	+18.658	+ 59	− 5	+19.404	+ 79	− 4	+18.991	+ 80	− 5	− 0.244	+298	−42
17	+12.499	−220	+28	+19.621	− 6	+29	+18.981	+ 5	− 3	+19.921	+ 23	− 1	+19.522	+ 25	− 2	+ 2.752	+297	−41
27	+10.111	−254	+32	+19.279	− 63	+31	+18.755	− 50	+ 1	+19.865	− 35	+ 2	+19.490	− 32	+ 1	+ 5.689	+286	−40
Oct. 7	+ 7.412	−282	+35	+18.369	−118	+31	+17.977	−105	+ 5	+19.225	− 93	+ 3	+18.887	− 88	+ 4	+ 8.474	+267	−37
17	+ 4.479	−301	+37	+16.910	−172	+31	+16.664	−157	+ 8	+18.014	−148	+ 5	+17.721	−144	+ 6	+11.024	+239	−34
27	+ 1.394	−311	+38	+14.935	−221	+31	+14.842	−205	+11	+16.254	−201	+ 7	+16.017	−195	+ 9	+13.258	+204	−29
Nov. 6	− 1.749	−312	+38	+12.498	−263	+29	+12.562	−248	+14	+13.993	−248	+ 9	+13.818	−242	+12	+15.100	+162	−23
16	− 4.853	−304	+37	+ 9.667	−298	+26	+ 9.887	−283	+16	+11.293	−288	+11	+11.187	−282	+14	+16.491	+114	−16
26	− 7.819	−285	+34	+ 6.527	−325	+22	+ 6.896	−310	+18	+ 8.235	−319	+12	+ 8.199	−312	+16	+17.377	+ 62	− 8
Dec. 6	−10.554	−257	+31	+ 3.173	−341	+18	+ 3.680	−328	+19	+ 4.909	−341	+14	+ 4.948	−333	+17	+17.727	+ 7	− 1
16	−12.965	−221	+27	− 0.289	−346	+13	+ 0.342	−335	+20	+ 1.422	−351	+15	+ 1.533	−344	+18	+17.524	− 48	+ 7
26	−14.973	−177	+21	− 3.747	−340	+ 8	− 3.013	−331	+21	− 2.115	−350	+15	− 1.935	−344	+18	+16.772	−102	+14
36	−16.511	−126	+15	− 7.087	−324	+ 2	− 6.273	−315	+19	− 5.586	−339	+14	− 5.343	−334	+18	+15.492	−154	+22

TABLE V.—*Reduction of the Wanstead Observations.*

λ CASSIOPEÆ.

Assuming $P = 36^\circ\ 55' + 99''$.

Dsy of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 10	145.5	143.88	− 46.″56	+1.″55	+0.″32	− 0.″79	− 45.″48	98.″40
15	143.1	141.51	− 46.28	+1.60	+0.20	+ 1.27	− 43.21	98.30
26	139.0	137.45	− 45.68	+1.66	+0.01	+ 4.33	− 39.68	97.77
27	140.4	138.84	− 45.62	+1.67	−0.01	+ 4.61	− 39.35	99.49
30	139.7	138.14	− 45.46	+1.69	−0.07	+ 5.42	− 38.42	99.72
Nov. 23	124.9	123.51	− 42.49	+2.00	−0.48	+15.83	− 25.14	98.37
25	123.6	122.22	− 42.38	+2.01	−0.47	+15.99	− 24.85	97.37
Dec. 3	123.3	121.93	− 41.94	+2.05	−0.37	+16.43	− 23.83	98.10
16	122.4	121.04	− 41.22	+2.13	−0.17	+16.46	− 22.80	98.24
23	122.3	120.94	− 40.84	+2.17	−0.04	+16.14	− 22.57	98.37
24	122.2	120.84	− 40.78	+2.18	−0.02	+16.05	− 22.57	98.27
25	122.4	121.04	− 40.73	+2.18	0.00	+15.98	− 22.57	98.47
1728 Jan. 1	123.4	122.03	− 41.17	+2.24	+0.18	+14.94	− 22.81	99.22
9	123.8	122.42	− 39.73	+2.28	+0.32	+13.79	− 23.34	99.08
14	124.3	122.92	− 39.46	+2.30	+0.38	+12.93	− 23.85	99.07
Nov. 28	101.0	99.88	− 22.02	+3.98	−0.42	+16.25	− 2.21	97.67
Dec. 3	101.3	100.18	− 21.75	+4.01	−0.36	+16.46	− 1.64	98.54
10	100.3	99.19	− 21.36	+4.04	−0.25	+16.56	− 1.01	98.18
11	101.0	99.88	− 21.31	+4.04	−0.23	+16.56	− 0.94	98.94
12	101.0	99.88	− 21.25	+4.05	−0.22	+16.55	− 0.87	99.01
15	101.0	99.88	− 21.09	+4.06	−0.17	+16.48	− 0.72	99.16
20	100.2	99.09	− 20.81	+4.08	−0.09	+16.26	− 0.56	98.53
24	99.5	98.39	− 20.59	+4.10	−0.02	+16.00	− 0.51	97.88
1729 Jan. 1	99.5	98.39	− 20.13	+4.15	+0.14	+15.22	− 0.62	97.77
Dec. 9	78.7	77.82	− 1.28	+5.55	−0.28	+16.57	+ 20.56	98.38
13	78.5	77.62	− 1.06	+5.56	−0.21	+16.53	+ 20.82	98.44
14	76.2	75.35	− 1.01	+5.56	−0.19	+16.51	+ 20.87	96.22
16	79.5	78.61	− 0.89	+5.57	−0.16	+16.45	+ 20.97	99.58
21	78.5	77.62	− 0.62	+5.59	−0.08	+16.22	+ 21.11	98.73
22	78.3	77.43	− 0.56	+5.59	−0.06	+16.16	+ 21.13	98.56
1730 Dec. 23	56.7	56.07	+ 19.63	+6.49	−0.04	+16.11	+ 42.19	98.26
1731 Jan. 4	56.5	55.87	+ 20.35	+6.51	+0.20	+14.77	+ 41.83	97.70
1732 Jan. 19	39.0	38.57	+ 41.42	+6.65	+0.44	+11.96	+ 60.47	99.04
1733 Jan. 10	19.0	18.79	+ 61.01	+6.02	+0.32	+13.83	+ 81.18	99.07
1734 Dec. 22	19.8	19.58	+100.16	+3.02	−0.06	+16.17	+119.29	99.71
1735 Jan. 2	19.0	18.79	+100.82	+2.85	+0.17	+15.04	+118.88	100.09
5	20.0	19.78	+100.99	+2.83	+0.22	+14.64	+118.68	98.90
1739 Jan. 2	95.0	93.94	+181.40	−5.42	+0.17	+15.04	+191.19	97.25
8	91.5	90.48	+181.73	−5.44	+0.27	+14.20	+190.76	100.28

TABLE V.—*Reduction of the Wanstead Observations.*

α CASSIOPEÆ.

Assuming $P = 34° 55' + 13''$.

Day of Observation.	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 10	60.8	60.12	−45.″96	+1.″88	+0.″29	− 1.″00	−43.″37	16.″75
15	56.3	55.68	−45.69	+1.91	+0.22	+ 0.42	−43.14	12.54
19	55.0	54.39	−45.48	+1.93	+0.16	+ 1.54	−41.85	12.54
20	55.6	54.98	−45.42	+1.94	+0.14	+ 1.82	−41.52	13.46
22	54.7	54.09	−45.31	+1.95	+0.12	+ 2.39	−40.85	13.24
26	54.5	53.89	−45.10	+1.98	+0.06	+ 3.53	−39.53	14.36
27	52.0	51.42	−45.04	+1.98	+0.04	+ 3.81	−39.21	12.21
30	52.9	52.31	−44.87	+2.00	−0.01	+ 4.64	−38.24	14.07
Oct. 19	46.8	46.27	−43.84	+2.11	−0.36	+ 9.57	−32.52	13.75
23	45.5	44.99	−43.63	+2.13	−0.41	+10.39	−31.52	13.47
Nov. 6	40.0	39.55	−42.86	+2.21	−0.52	+13.38	−27.79	11.76
23	38.0	37.58	−41.94	+2.31	−0.48	+15.83	−24.28	13.30
25	37.5	37.08	−41.84	+2.32	−0.47	+15.93	−24.06	13.02
Dec. 3	36.5	36.09	−41.40	+2.36	−0.39	+16.23	−23.20	12.89
16	36.2	35.80	−40.69	+2.43	−0.19	+16.72	−21.73	14.07
23	34.7	34.31	−40.31	+2.48	−0.08	+16.48	−21.43	12.88
24	34.2	33.82	−40.26	+2.48	−0.06	+16.42	−21.42	12.40
25	34.2	33.82	−40.21	+2.49	−0.04	+16.35	−21.41	12.41
1728 Jan. 1	35.0	34.61	−39.63	+2.55	+0.16	+15.46	−21.46	13.51
9	35.0	34.61	−39.23	+2.59	+0.30	+14.42	−21.92	12.69
14	36.0	35.60	−38.96	+2.62	+0.37	+13.61	−22.36	13.21
27	38.0	37.58	−38.25	+2.69	+0.50	+11.03	−24.03	13.55
31	38.1	37.68	−38.03	+2.71	+0.53	+10.90	−23.89	13.79
Feb. 13	40.5	40.04	−37.33	+2.79	+0.51	+ 6.80	−27.23	12.81
14	42.5	42.02	−37.28	+2.79	+0.51	+ 6.53	−27.45	14.57
16	41.5	41.03	−37.17	+2.80	+0.50	+ 5.99	−27.88	13.15
Apr. 3	51.4	50.83	−34.72	+3.05	−0.18	− 6.74	−38.59	12.24
18	54.6	53.99	−33.91	+3.13	−0.40	−10.40	−41.58	12.41
29	57.6	55.97	−33.32	+3.19	−0.51	−12.66	−43.30	12.67
May 19	59.0	58.34	−32.23	+3.29	−0.50	−15.57	−45.01	13.33
June 18	56.8	56.17	−30.69	+3.45	−0.11	−16.64	−43.99	12.18
28	56.0	55.38	−30.06	+3.50	+0.06	−16.07	−42.54	12.84
July 4	56.7	56.07	−29.72	+3.53	+0.17	−15.53	−41.55	14.52
5	56.0	55.38	−29.67	+3.54	+0.19	−15.42	−41.36	14.02
9	54.0	53.40	−29.45	+3.56	+0.25	−14.94	−40.58	12.82
16	53.4	52.81	−29.07	+3.59	+0.34	−13.97	−39.11	13.70
Aug. 7	48.0	47.47	−27.88	+3.70	+0.53	− 9.73	−33.38	14.09
9	46.8	46.28	−27.77	+3.71	+0.53	− 9.24	−32.77	13.51
11	46.5	45.98	−27.66	+3.72	+0.52	− 8.74	−32.16	13.82
Sept. 24	33.0	32.63	−25.27	+3.94	+0.05	+ 3.18	−18.10	14.53
29	30.0	29.67	−25.00	+3.96	−0.04	+ 4.55	−16.53	13.14
30	29.5	29.17	−24.95	+3.97	−0.06	+ 4.82	−16.52	12.65
Oct. 1	29.8	29.47	−24.89	+3.97	−0.07	+ 5.08	−15.91	13.56
26	21.3	21.07	−23.54	+4.09	−0.45	+11.34	− 8.56	12.51
29	20.0	19.78	−23.36	+4.11	−0.48	+11.96	− 7.77	12.01
Nov. 11	17.6	17.40	−22.66	+4.17	−0.52	+14.29	− 4.72	12.68
28	15.0	14.83	−21.74	+4.25	−0.44	+16.24	− 1.69	13.14
Dec. 3	14.0	13.84	−21.47	+4.27	−0.38	+16.54	− 1.04	12.80
4	13.0	12.86	−21.42	+4.27	−0.37	+16.59	− 0.93	11.93
10	14.5	14.33	−21.09	+4.30	−0.27	+16.75	− 0.31	14.02

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
Dec. 11	13.5	13.35	− 21″.04	+4″.30	−0″.25	+16″.78	− 0″.21	13″.14
12	13.2	13.06	− 20.99	+4.31	−0.26	+16.75	− 0.19	12.87
15	13.5	13.35	− 20.82	+4.33	−0.22	+16.74	− 0.03	13.38
20	11.8	11.67	− 20.55	+4.35	−0.10	+16.59	+ 0.29	11.96
22	12.8	12.66	− 20.44	+4.36	−0.06	+16.49	+ 0.35	13.01
24	12.2	12.07	− 20.33	+4.37	−0.03	+16.39	+ 0.40	12.47
26	12.3	12.17	− 20.22	+4.38	+0.01	+16.29	+ 0.46	12.63
27	12.0	11.87	− 20.17	+4.38	+0.03	+16.24	+ 0.48	12.35
1729 Feb. 5	17.5	17.30	− 17.93	+4.57	+0.52	+ 9.20	− 3.64	13.66
Mar. 8	24.3	24.03	− 16.25	+4.71	+0.27	+ 0.64	− 10.63	13.40
9	23.0	22.74	− 16.20	+4.71	+0.26	+ 0.35	− 10.88	11.86
28	29.5	29.17	− 15.16	+4.80	−0.08	− 5.07	− 15.51	13.66
29	31.5	31.14	− 15.11	+4.80	−0.10	− 5.34	− 15.57	15.39
Apr. 20	33.0	32.63	− 13.91	+4.89	−0.43	−10.80	− 20.25	12.38
June 14	35.7	35.30	− 10.92	+5.11	−0.19	−16.74	− 22.74	12.56
15	36.7	36.29	− 10.87	+5.11	−0.17	−16.73	− 22.66	13.63
16	36.5	36.09	− 10.82	+5.12	−0.16	−16.71	− 22.57	13.52
17	35.6	35.20	− 10.76	+5.12	−0.15	−16.68	− 22.47	12.73
18	36.5	36.09	− 10.71	+5.13	−0.13	−16.65	− 22.36	13.73
19	37.0	36.59	− 10.66	+5.13	−0.11	−16.61	− 22.25	14.34
22	35.5	35.10	− 10.49	+5.14	−0.05	−16.48	− 21.88	13.22
July 5	33.0	32.63	− 9.78	+5.19	+0.17	−15.45	− 19.87	12.76
Oct. 8	5.5	5.43	− 4.62	+5.54	−0.20	+ 6.95	+ 7.67	13.10
26	1.0	0.99	− 3.65	+5.60	−0.45	+11.28	+ 12.78	11.79
28	0.7	0.69	− 3.53	+5.61	−0.47	+11.71	+ 13.32	12.63
Dec. 4	9.0	8.90	− 1.53	+5.72	−0.37	+16.57	+ 20.39	11.49
9	8.2	8.11	− 1.25	+5.74	−0.29	+16.73	+ 20.93	12.82
13	9.3	9.20	− 1.04	+5.75	−0.23	+16.77	+ 21.25	12.05
14	9.5	9.39	− 0.98	+5.75	−0.21	+16.75	+ 21.31	11.92
16	8.5	8.40	− 0.87	+5.76	−0.18	+16.73	+ 21.44	13.04
21	10.8	10.68	− 0.60	+5.77	−0.10	+16.56	+ 21.63	10.95
22	10.0	9.89	− 0.55	+5.77	−0.08	+16.51	+ 21.65	11.76
1730 June 18	14.0	13.84	+ 9.17	+6.25	+0.40	−16.65	− 0.83	13.01
22	14.0	13.84	+ 9.38	+6.26	+0.45	−16.48	− 0.39	13.45
30	13.3	13.16	+ 9.83	+6.28	+0.50	−15.95	+ 0.66	13.82
Dec. 20	31.0	30.65	+ 19.22	+6.56	−0.11	+16.61	+ 42.28	11.63
22	31.5	31.14	+ 19.33	+6.57	−0.07	+16.52	+ 42.35	11.21
23	32.5	32.13	+ 19.38	+6.57	−0.05	+16.47	+ 42.37	10.24
1732 Jan. 19	49.7	49.14	+ 40.90	+6.62	+0.43	+12.68	+ 60.63	11.49
Apr. 28	27.5	27.19	+ 46.21	+6.50	−0.49	−12.47	+ 39.75	12.56
1733 Jan. 10	68.0	67.24	+ 60.23	+5.88	+0.29	+14.46	+ 80.86	13.62
Feb. 1	65.5	64.77	+ 61.43	+5.81	+0.52	+10.62	+ 78.38	13.61
1734 June 23	63.0	62.30	+ 89.01	+3.65	−0.04	−16.45	+ 76.17	13.87
24	63.5	62.79	+ 89.07	+3.65	−0.02	−16.39	+ 76.31	13.52
Dec. 22	106.6	105.41	+ 98.90	+2.63	−0.07	+16.51	+117.97	12.56
1735 Jan. 2	106.0	104.82	+ 99.55	+2.56	+0.15	+15.55	+117.81	12.99
5	107.0	105.81	+ 99.71	+2.54	+0.20	+15.18	+117.63	11.82
1739 Jan. 3	178.2	176.22	+179.16	−5.61	+0.17	+15.43	+189.15	12.93
8	178.0	176.02	+179.43	−5.63	+0.26	+14.77	+188.83	12.81
1740 June 13	171.0	169.10	+207.85	−6.70	−0.20	−16.62	+184.33	15.23
1747 Mar. 10	336.0	332.26	+341.85	+3.69	+0.26	+ 0.24	+346.04	13.78

TABLE V.—*Reduction of the Wanstead Observations.*

τ PERSEI.

Assuming $P = 38° 20' + 28''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 22	62.8	62.10	− 35.″50	+6.″27	+0.″38	− 4.″52	− 33.″37	28.″73
27	60.8	60.12	− 35.29	+6.29	+0.32	− 3.46	− 32.14	27.98
Oct. 24	53.9	53.30	− 34.14	+6.40	−0.17	+ 2.55	− 25.36	27.94
31	53.6	53.00	− 33.84	+6.43	−0.28	+ 4.09	− 23.60	29.40
Nov. 25	45.8	45.29	− 32.77	+6.51	−0.54	+ 8.96	− 17.84	27.45
Dec. 23	42.0	41.53	− 31.59	+6.61	−0.36	+12.38	− 12.96	28.57
1728 Jan. 1	41.4	40.94	− 31.07	+6.65	−0.16	+12.98	− 11.60	29.34
9	40.1	39.65	− 30.72	+6.68	0.00	+13.03	− 11.01	28.64
14	41.6	41.13	− 30.57	+6.69	+0.09	+12.94	− 10.85	30.28
27	40.2	39.75	− 29.96	+6.73	+0.32	+12.24	− 10.67	29.08
Feb. 13	41.0	40.54	− 29.24	+6.79	+0.51	+10.35	− 11.59	28.95
14	42.0	41.53	− 29.20	+6.79	+0.52	+10.21	− 11.68	29.85
15	39.8	39.36	− 29.15	+6.79	+0.52	+10.07	− 11.77	27.59
16	42.4	41.93	− 29.11	+6.80	+0.53	+ 9.92	− 11.86	30.07
Aug. 9	55.7	55.08	− 21.75	+7.24	+0.43	−11.53	− 25.61	29.47
14	52.0	51.42	− 21.54	+7.25	+0.48	−10.98	− 24.79	26.63
18	54.5	53.89	− 21.36	+7.26	+0.51	−10.48	− 24.07	29.82
24	52.7	52.11	− 21.11	+7.27	+0.54	− 9.65	− 22.95	29.16
30	52.0	51.42	− 20.86	+7.28	+0.55	− 8.71	− 21.74	29.68
Oct. 29	35.0	34.61	− 18.30	+7.39	−0.27	+ 3.82	− 7.36	27.25
Nov. 11	32.5	32.13	− 17.75	+7.41	−0.45	+ 6.53	− 4.26	27.87
30	28.0	27.69	− 16.94	+7.43	−0.54	+ 9.88	− 0.17	27.52
Dec. 3	27.5	27.19	− 16.81	+7.44	−0.54	+10.31	+ 0.40	27.59
4	27.5	27.19	− 16.77	+7.44	−0.53	+10.45	+ 0.59	27.78
12	26.5	26.20	− 16.43	+7.45	−0.48	+11.45	+ 1.99	28.19
22	23.5	23.23	− 16.01	+7.46	−0.36	+12.36	+ 3.45	26.68
1729 Jan. 1	22.5	22.24	− 15.54	+7.48	−0.18	+12.93	+ 4.69	26.93
14	21.6	21.36	− 14.98	+7.49	+0.07	+12.98	+ 5.56	26.92
25	22.5	22.24	− 14.52	+7.51	+0.22	+12.47	+ 5.68	27.92
Feb. 5	22.5	22.24	− 14.05	+7.52	+0.43	+11.50	+ 5.40	27.64
12	23.8	23.53	− 13.76	+7.52	+0.50	+10.65	+ 4.91	28.44
Aug. 26	35.5	35.10	− 5.45	+7.58	+0.54	− 9.39	− 6.72	28.38
31	34.0	33.62	− 5.25	+7.58	+0.54	− 8.59	− 5.72	27.90
Sept. 1	36.0	35.60	− 5.20	+7.58	+0.54	− 8.43	− 5.51	30.09
Dec. 9	10.0	9.89	− 0.99	+7.52	−0.51	+11.07	+ 17.09	26.98
13	9.2	9.10	− 0.81	+7.51	−0.47	+11.52	+ 17.75	26.85
14	8.7	8.60	− 0.77	+7.51	−0.46	+11.63	+ 17.91	26.51
21	9.0	8.90	− 0.48	+7.50	−0.38	+12.27	+ 18.91	27.81
1730 Feb. 11	8.0	7.91	+ 1.78	+7.44	+0.49	+10.82	+ 20.53	28.44
1731 Jan. 4	7.0	6.92	+ 15.75	+6.67	−0.13	+13.01	+ 35.30	28.38
14	8.2	8.11	+ 16.18	+6.63	+0.06	+12.99	+ 35.86	27.75
29	8.2	8.11	+ 16.81	+6.57	+0.33	+12.21	+ 35.92	27.81
1732 Jan. 6	22.5	22.24	+ 31.49	+5.20	−0.06	+13.06	+ 49.69	27.45
19	22.3	22.04	+ 32.04	+5.12	+0.19	+12.75	+ 50.10	28.06
20	21.5	21 26	+ 32.08	+5.11	+0.21	+12.70	+ 50.10	28.84
1733 Feb. 1	35.0	34.61	+ 48.13	+2.72	+0.39	+11.90	+ 63.14	28.53
1739 Jan. 2	119.7	118.36	+140.54	−7.71	−0.17	+12.95	+145.41	27.05
3	118.5	117.18	+140.39	−7.71	−0.15	+12.98	+145.51	28.33
4	118.0	116.69	+140.43	−7.71	−0.13	+13.00	+145.59	28.90
8	117.2	115.90	+140.60	−7.70	−0.05	+13.05	+145.90	30.00
1740 Feb. 2	134.0	132.51	+157.33	−6.93	+0.41	+11.69	+162.50	29.99

TABLE V.—*Reduction of the Wanstead Observations.*

α PERSEI.

Assuming $P = 41° 5' + 71''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Oct. 31	91.7	90.68	−29.98	+7.16	−0.23	+ 2.45	−20.60	70.08
Nov. 25	87.5	86.52	−29.04	+7.23	−0.53	+ 7.01	−15.33	71.19
Dec. 23	83.0	82.08	−27.99	+7.30	−0.41	+10.57	−10.53	71.55
1728 Jan. 9	80.3	79.41	−27.23	+7.36	−0.07	+11.56	− 8.38	71.03
27	80.0	79.11	−26.55	+7.40	+0.27	+11.23	− 7.65	71.46
Feb. 13	79.3	78.42	−25.91	+7.44	+0.49	+ 9.90	− 8.08	70.34
14	79.7	78.81	−25.87	+7.44	+0.50	+ 9.79	− 8.14	70.67
16	80.5	79.60	−25.79	+7.45	+0.52	+ 9.56	− 8.26	71.34
27	82.0	81.09	−25.37	+7.47	+0.56	+ 8.14	− 9.20	71.89
Mar. 3	81.2	80.30	−25.27	+7.48	+0.55	+ 7.69	− 9.55	70.75
Apr. 3	86.5	85.53	−24.09	+7.55	+0.20	+ 2.19	−14.15	71.38
18	88.5	87.51	−23.53	+7.58	−0.08	− 0.74	−16.77	70.74
May 6	91.0	89.99	−22.85	+7.61	−0.37	− 4.18	−19.79	70.20
19	93.8	92.75	−22.36	+7.64	−0.51	− 6.40	−21.63	71.12
June 28	96.0	94.93	−20.85	+7.70	−0.33	−11.01	−24.49	70.44
July 3	96.5	95.42	−20.66	+7.71	−0.25	−11.28	−24.48	70.94
16	95.6	94.53	−20.17	+7.73	−0.02	−11.59	−24.05	70.48
30	95.5	94.43	−19.65	+7.75	+0.23	−11.33	−23.00	71.43
31	93.0	91.96	−19.61	+7.75	+0.25	−11.29	−22.90	69.06
Aug. 2	94.8	93.74	−19.53	+7.75	+0.28	−11.19	−22.69	71.05
7	93.0	91.96	−19.34	+7.76	+0.36	−10.90	−22.12	69.84
9	93.0	91.96	−19.27	+7.76	+0.38	−10.76	−22.27	69.69
24	88.5	87.51	−18.70	+7.78	+0.53	− 9.36	−19.75	67.76
Oct. 29	76.0	75.15	−16.21	+7.85	−0.21	+ 2.20	− 6.37	68.78
Nov. 11	73.0	72.19	−15.72	+7.85	−0.41	+ 4.72	− 3.56	68.63
30	71.0	70.21	−15.00	+7.86	−0.55	+ 7.92	+ 0.23	70.44
Dec. 3	69.5	68.72	−14.89	+7.86	−0.55	+ 8.36	+ 0.78	69.58
4	70.5	69.71	−14.85	+7.86	−0.55	+ 8.51	+ 0.97	70.68
12	68.7	67.93	−14.55	+7.86	−0.51	+ 9.52	+ 2.32	70.25
20	67.0	66.25	−14.25	+7.87	−0.44	+10.36	+ 3.54	69.79
22	66.6	65.85	−14.18	+7.87	−0.41	+10.54	+ 3.82	69.67
24	66.4	65.66	−14.10	+7.87	−0.39	+10.71	+ 4.09	69.75
1729 Jan. 1	64.5	63.78	−13.77	+7.88	−0.25	+11.28	+ 5.14	68.92
25	64.4	63.69	−12.87	+7.88	+0.21	+11.42	+ 6.64	70.33
Feb. 12	64.2	63.49	−12.18	+7.88	+0.47	+10.12	+ 6.29	69.78
Mar. 8	68.0	67.24	−11.28	+7.88	+0.53	+ 6.95	+ 4.08	71.32
9	68.0	67.24	−11.24	+7.88	+0.52	+ 6.79	+ 3.95	71.19
July 4	82.2	81.29	− 6.83	+7.83	−0.23	−11.33	−10.56	70.73
5	81.5	80.59	− 6.79	+7.82	−0.22	−11.35	−10.54	70.05
8	81.7	80.79	− 6.67	+7.82	−0.17	−11.45	−10.47	70.32
10	83.0	82.08	− 6.59	+7.82	−0.13	−11.50	−10.40	71.68
11	81.7	80.79	− 6.55	+7.82	−0.11	−11.53	−10.37	70.42
12	82.0	81.09	− 6.51	+7.82	−0.09	−11.54	−10.32	70.77
23	81.2	80.30	− 6.11	+7.81	+0.11	−11.53	− 9.83	70.47
Aug. 18	76.0	75.15	− 5.13	+7.78	+0.49	−10.02	− 6.88	68.27
26	76.8	75.94	− 4.82	+7.77	+0.54	− 9.15	− 5.66	70.28
Sept. 1	76.0	75.15	− 4.60	+7.76	+0.55	− 8.38	− 4.67	70.48
Dec. 9	56.0	55.38	− 0.86	+7.60	−0.53	+ 9.13	+15.34	70.72
13	55.0	54.39	− 0.71	+7.60	−0.51	+ 9.60	+15.98	70.37
14	54.0	53.40	− 0.67	+7.59	−0.50	+ 9.72	+16.14	69.54

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1729 Dec. 21	52.7	52.11	− 0.″42	+7.″58	−0.″43	+10.″43	+ 17.″16	69.″27
1730 Feb. 11	51.5	50.92	+ 1.58	+7.46	+0.46	+10.24	+ 19.74	70.66
July 26	68.5	67.73	+ 7.80	+7.00	+0.14	−11.48	+ 3.46	71.19
1731 Jan. 4	40.0	39.55	+ 13.95	+6.38	−0.22	+11.38	+ 31.49	71.04
14	39.0	38.57	+ 14.33	+6.33	−0.01	+11.59	+ 32.24	70.81
29	39.5	39.06	+ 14.89	+6.26	+0.27	+11.22	+ 32.64	71.70
1732 Jan. 6	28.0	27.69	+ 27.90	+4.61	−0.13	+11.51	+ 43.89	71.57
19	26.8	26.50	+ 28.38	+4.52	+0.12	+11.52	+ 44.54	71.04
1734 June 23	22.0	21.75	+ 61.81	−1.88	−0.40	−10.62	+ 48.91	70.66
July 22	21.0	20.77	+ 62.90	−2.09	+0.08	−11.53	+ 49.36	70.13
1739 Jan. 3	56.5	55.87	+124.40	−7.85	−0.22	+11.33	+127.66	71.79
4	57.3	56.67	+124.44	−7.85	−0.20	+11.38	+127.77	71.10
1740 Jan. 31	73.0	72.19	+139.34	−6.70	+0.32	+11.00	+143.96	71.77
Feb. 2	72.3	71.58	+139.42	−6.70	+0.35	+10.86	+143.93	72.43

γ PERSEI.

Assuming $P = 37° 35' - 114''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 27	83.2	82.28	−34.″09	+6.″56	+0.″34	− 4.″15	−31.″34	113.″62
Nov. 25	98.0	96.91	−31.66	+6.77	−0.54	+ 8.36	−17.07	113.98
Dec. 23	102.3	101.16	−30.51	+6.86	−0.38	+12.08	−11.95	113.11
1728 Jan. 9	104.8	103.63	−29.68	+6.92	−0.03	+12.97	− 9.82	113.45
14	106.0	104.82	−29.47	+6.94	+0.07	+12.94	− 9.52	114.34
27	105.5	104.32	−28.93	+6.97	+0.31	+12.40	− 9.25	113.57
31	106.7	105.51	−28.77	+6.99	+0.37	+12.10	− 9.31	114.82
Feb. 13	105.0	103.83	−28.24	+7.02	+0.51	+10.72	− 9.99	113.82
14	104.3	103.14	−28.20	+7.02	+0.51	+10.59	−10.08	113.22
15	105.0	103.83	−28.16	+7.03	+0.52	+10.46	−10.15	113.98
16	103.7	102.54	−28.12	+7.03	+0.52	+10.32	−10.25	112.79
27	103.0	101.85	−27.67	+7.06	+0.55	+ 8.88	−11.18	113.03
Jul. 9	88.9	87.02	−22.28	+7.38	−0.08	−12.92	−27.90	114.92
Aug. 7	89.7	88.70	−21.09	+7.43	+0.40	−11.96	−25.22	113.92
18	90.0	89.00	−20.64	+7.45	+0.50	−10.87	−23.56	112.56
24	91.5	90.48	−20.39	+7.46	+0.53	−10.09	−22.49	112.97
Oct. 29	109.0	107.79	−17.67	+7.56	−0.25	+ 3.07	− 7.29	115.08
Nov. 11	111.0	109.76	−17.14	+7.56	−0.44	+ 5.85	− 4.17	113.93
30	116.0	114.71	−16.36	+7.59	−0.55	+ 9.31	− 0.01	114.72
Dec. 3	116.5	115.20	−16.24	+7.60	−0.54	+ 9.79	+ 0.61	114.59
4	116.0	114.71	−16.20	+7.60	−0.54	+ 9.93	+ 0.79	113.92
12	118.8	117.48	−15.87	+7.61	−0.49	+11.01	+ 2.26	115.22
20	120.2	118.86	−15.54	+7.61	−0.41	+11.88	+ 3.54	115.32
22	119.5	118.16	−15.46	+7.61	−0.38	+12.06	+ 3.83	114.33
24	120.8	119.45	−15.38	+7.62	−0.35	+12.23	+ 4.12	115.33
1729 Jan. 1	121.0	119.65	−15.00	+7.63	−0.20	+12.75	+ 5.18	114.47

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1729 Jan. 3	120.0	118.66	− 14.″92	+7.″63	−0.″17	+12.″82	+ 5.″36	113.″30
14	122.8	121.43	− 14.47	+7.64	+0.05	+12.96	+ 6.18	115.25
Feb. 5	122.5	121.13	− 13.57	+7.66	+0.42	+11.76	+ 6.27	114.86
Mar. 8	118.0	116.69	− 12.29	+7.67	+0.51	+ 7.25	+ 3.14	113.55
9	118.5	117.18	− 12.25	+7.67	+0.50	+ 7.06	+ 2.98	114.20
July 11	102.0	100.86	− 7.15	+7.69	−0.07	−12.95	− 12.48	113.34
23	104.5	103.33	− 6.66	+7.68	+0.15	−12.84	− 11.67	115.00
Aug. 18	109.0	107.79	− 5.60	+7.67	+0.51	−10.88	− 8.30	116.09
26	108.5	107.29	− 5.27	+7.66	+0.54	− 9.85	− 6.92	114.21
Sept. 1	108.0	106.80	− 5.02	+7.56	+0.54	− 8.92	− 5.74	112.54
Dec. 9	133.0	131.52	− 0.99	+7.56	−0.52	+10.60	+ 16.65	114.87
13	134.5	133.00	− 0.79	+7.56	−0.49	+11.10	+ 17.38	115.62
14	134.5	130.00	− 0.75	+7.56	−0.48	+11.21	+ 17.54	112.46
1730 Feb. 11	136.5	134.98	+ 1.72	+7.46	+0.48	+11.16	+ 20.82	114.16
1731 Jan. 4	150.3	148.63	+ 15.20	+6.58	−0.16	+12.84	+ 34.46	114.17
14	152.0	150.31	+ 15.61	+6.54	+0.04	+12.96	+ 35.15	115.16
29	151.2	149.52	+ 16.23	+6.48	+0.31	+12.40	+ 35.42	114.10
1732 Jan. 6	165.5	163.65	+ 30.39	+5.01	−0.08	+12.92	+ 48.24	115.41
19	165.5	163.65	+ 30.93	+4.92	+0.16	+12.81	+ 48.82	114.83
1739 Jan. 2	257.0	254.14	+135.31	−7.77	−0.19	+12.76	+140.11	114.03
3	256.0	253.15	+135.35	−7.77	−0.17	+12.79	+140.20	112.95
4	257.2	254.34	+135.39	−7.77	−0.16	+12.83	+140.29	114.05
8	256.0	253.15	+135.56	−7.76	−0.08	+12.92	+140.64	112.51
1740 Jan. 31	274.0	270.95	+151.58	−6.87	+0.39	+12.10	+157.20	113.75
Feb. 2	272.7	269.66	+151.66	−6.86	+0.39	+11.93	+157.12	112.54

δ PERSEI.

Assuming $P = 43° 5' + 7''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Oct. 24	13.0	12.86	−27.″62	+7.″53	+0.″06	+ 0.″26	−19.″77	6.″91
Nov. 25	7.4	7.32	−26.52	+7.61	−0.52	+ 5.85	−13.58	6.26
Dec. 23	3.3	3.27	−25.56	+7.67	−0.44	+ 9.32	− 9.01	5.74
1728 Jan. 9	1.0	0.99	−24.86	+7.72	−0.12	+10.49	− 6.77	5.78
27	0.5	0.49	−24.24	+7.75	+0.23	+10.41	− 5.85	5.36
Feb. 13	0.5	0.49	−23.65	+7.79	+0.47	+ 9.38	− 6.01	5.52
14	0.0	0.00	−23.61	+7.79	+0.48	+ 9.29	− 6.05	6.05
16	0.7	0.69	−23.55	+7.79	+0.50	+ 9.11	− 6.15	5.46
25	1.2	1.19	−23.24	+7.81	+0.52	+ 8.15	− 6.76	5.57
27	1.0	0.99	−23.17	+7.81	+0.56	+ 7.91	− 6.89	5.90
Mar. 3	1.4	1.39	−23.07	+7.82	+0.56	+ 7.53	− 7.16	5.77
July 31	13.5	13.35	−17.91	+8.01	+0.21	−10.44	−20.13	6.78
Aug. 7	11.0	10.88	−17.67	+8.02	+0.33	−10.17	−19.49	8.61
9	10.5	10.38	−17.59	+8.02	+0.35	−10.06	−19.28	8.90
14	13.0	12.86	−17.42	+8.02	+0.42	− 9.76	−18.74	5.88
24	8.0	7.91	−17.08	+8.03	+0.51	− 8.94	−17.48	9.57
Oct. 29	2.0	1.98	−14.81	+8.06	−0.17	+ 1.32	− 5.60	7.58

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1830
1728 Nov. 30	8.0	7.91	−13.″71	+8.″06	−0.″55	+ 6.″71	+ 0.″51	6.″40
Dec. 3	8.0	7.91	−13.61	+8.06	−0.55	+ 7.13	+ 1.03	6.88
4	8.5	8.40	−13.58	+8.06	−0.55	+ 7.27	+ 1.20	7.20
12	9.0	8.90	−13.29	+8.06	−0.53	+ 8.20	+ 2.44	6.46
20	11.0	10.88	−13.02	+8.05	−0.47	+ 9.12	+ 3.68	7.20
22	11.2	11.08	−12.59	+8.05	−0.45	+ 9.30	+ 3.95	7.13
24	10.5	10.38	−12.89	+8.05	−0.43	+ 9.46	+ 4.19	6.19
1729 Jan. 25	14.0	13.84	−11.74	+8.05	+0.17	+10.50	+ 6.98	6.86
Feb. 5	13.5	13.35	−11.36	+8.04	+0.36	+10.05	+ 7.09	6.26
12	14.0	13.84	−11.11	+8.04	+0.45	+ 9.56	+ 6.94	6.90
Mar. 8	12.2	12.07	−10.30	+8.02	+0.54	+ 6.99	+ 5.25	6.82
9	12.5	12.36	−10.26	+8.02	+0.54	+ 6.88	+ 5.18	7.18
Aug. 26	2.7	2.67	− 4.41	+7.81	+0.53	− 8.77	− 4.84	7.51
Dec. 21	23.3	23.04	− 0.39	+7.56	−0.46	+ 9.17	+15.89	7.15
1730 Feb. 11	24.8	24.52	+ 1.44	+7.41	+0.44	+ 9.66	+18.95	5.57
July 26	9.5	9.39	+ 7.11	+6.85	+0.11	−10.55	+ 3.52	5.87
28	11.0	10.88	+ 7.18	+6.84	+0.15	−10.52	+ 3.65	7.23
1731 Jan. 14	36.0	35.60	+13.06	+6.09	−0.05	+10.55	+29.65	5.95

9 AURIGÆ.

Assuming $P = 38^{\circ}\,45' + 93''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Oct. 24	103.5	102.34	−13.″57	+8.″66	+0.″13	− 5.″03	− 9.″81	92.″53
Nov. 27	99.0	97.90	−13.00	+8.67	−0.47	+ 0.71	− 4.09	93.81
Dec. 3	97.0	95.92	−12.90	+8.67	−0.52	+ 1.76	− 2.99	92.93
1728 Jan. 27	88.0	87.02	−11.90	+8.67	+0.05	+ 9.36	+ 6.18	93.20
Feb. 4	87.0	86.03	−11.76	+8.67	+0.20	+ 9.80	+ 6.91	92.94
6	87.5	86.52	−11.73	+8.67	+0.24	+ 9.84	+ 7.02	93.54
13	87.0	86.03	−11.61	+8.67	+0.36	+ 9.95	+ 7.37	93.40
14	86.5	85.53	−11.59	+8.67	+0.37	+ 9.96	+ 7.41	92.94
15	85.4	84.45	−11.57	+8.67	+0.39	+ 9.97	+ 7.46	91.91
16	87.0	86.03	−11.56	+8.67	+0.40	+ 9.98	+ 7.49	93.52
29	85.5	84.54	−11.36	+8.66	+0.54	+ 9.84	+ 7.68	92.22
Mar. 3	86.0	85.04	−11.33	+8.66	+0.55	+ 9.76	+ 7.64	92.68
Sept. 29	103.5	102.34	− 7.78	+8.42	+0.50	− 8.12	− 6.98	95.36
Nov. 27	92.0	90.98	− 6.79	+8.29	−0.48	+ 0.84	+ 1.86	92.84
30	91.0	89.99	− 6.74	+8.29	−0.50	+ 1.35	+ 2.40	92.39
Dec. 20	87.0	86.03	− 6.40	+8.24	−0.55	+ 4.73	+ 6.02	92.05
24	86.0	85.04	− 6.33	+8.23	−0.53	+ 5.39	+ 6.76	91.80
1731 Jan. 29	73.5	72.68	+ 6.67	+4.49	+0.05	+ 9.37	+20.58	93.26
Feb. 16	72.2	71.40	+ 6.97	+4.33	+0.38	+10.01	+21.69	93.09
1733 Feb. 11	65.8	65.07	+19.27	−1.31	+0.31	+ 9.95	+28.22	93.29
1740 Jan. 31	26.7	26.40	+62.36	−5.12	+0.11	+ 9.59	+66.94	93.34

TABLE V.—*Reduction of the Wanstead Observations.*

α AURIGÆ.

Assuming $P = 44° 15' + 148''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 2	159.6	157.82	−11.″79	+8.″70	+0.″50	−8.″11	−10.″70	147.″12
5	159.3	157.53	−11.74	+8.71	+0.53	−8.05	−10.55	146.98
6	159.5	157.72	−11.73	+8.71	+0.54	−8.02	−10.50	147.22
15	159.0	157.23	−11.61	+8.71	+0.57	−7.68	−10.01	147.22
16	159.7	157.92	−11.60	+8.71	+0.57	−7.64	− 9.96	147.96
18	160.2	158.42	−11.57	+8.71	+0.58	−7.53	− 9.81	148.61
19	159.3	157.53	−11.56	+8.71	+0.57	−7.47	− 9.74	147.79
20	160.0	158.22	−11.55	+8.72	+0.57	−7.42	− 9.68	148.54
Oct. 4	158.3	156.54	−11.35	+8.72	+0.47	−6.38	− 8.54	148.00
8	158.3	156.54	−11.29	+8.72	+0.43	−6.01	− 8.15	148.39
24	155.0	153.27	−11.08	+8.73	+0.16	−4.27	− 6.46	146.81
31	154.6	152.87	−10.98	+8.73	+0.02	−3.39	− 5.62	147.25
Nov. 25	152.3	150.61	−10.63	+8.73	−0.43	+0.10	− 2.23	148.38
27	153.9	152.19	−10.60	+8.73	−0.45	+0.40	− 1.92	150.27
Dec. 16	148.9	147.24	−10.35	+8.73	−0.57	+3.07	+ 0.88	148.12
20	149.8	148.13	−10.29	+8.73	−0.56	+3.60	+ 1.48	149.61
23	149.8	148.13	−10.25	+8.73	−0.55	+3.98	+ 1.91	150.04
24	147.5	145.85	−10.24	+8.73	−0.54	+4.10	+ 2.05	147.90
1728 Jan. 1	148.4	146.75	−10.07	+8.73	−0.44	+5.41	+ 3.63	150.38
23	145.3	143.69	− 9.76	+8.72	−0.06	+7.34	+ 6.24	149.93
27	144.3	142.70	− 9.71	+8.72	+0.01	+7.58	+ 6.60	149.30
Feb. 4	143.2	141.61	− 9.60	+8.71	+0.18	+7.94	+ 7.23	148.84
6	143.0	141.41	− 9.57	+8.71	+0.22	+8.01	+ 7.37	148.78
7	143.6	142.00	− 9.56	+8.71	+0.24	+8.04	+ 7.43	149.43
13	142.4	140.82	− 9.47	+8.70	+0.33	+8.15	+ 7.71	148.53
14	142.7	141.11	− 9.46	+8.70	+0.35	+8.16	+ 7.75	148.86
16	143.0	141.41	− 9.43	+8.70	+0.38	+8.18	+ 7.83	149.24
25	142.5	140.91	− 9.31	+8.70	+0.49	+8.12	+ 8.00	148.91
29	141.6	140.02	− 9.25	+8.69	+0.53	+8.04	+ 8.01	148.03
Mar. 3	141.7	140.12	− 9.24	+8.69	+0.54	+8.01	+ 8.00	148.12
13	143.2	141.61	− 9.11	+8.69	+0.57	+7.60	+ 7.75	149.36
17	143.5	141.90	− 9.05	+8.69	+0.56	+7.37	+ 7.57	149.47
18	144.0	142.40	− 9.04	+8.68	+0.56	+7.31	+ 7.51	149.91
19	143.9	142.30	− 9.02	+8.68	+0.56	+7.25	+ 7.47	149.77
23	143.3	141.71	− 8.97	+8.68	+0.54	+6.96	+ 7.21	148.92
29	143.0	141.41	− 8.88	+8.68	+0.49	+6.94	+ 6.78	148.19
30	144.8	143.19	− 8.87	+8.68	+0.48	+6.40	+ 6.69	149.88
Apr. 1	144.7	142.80	− 8.84	+8.68	+0.45	+6.22	+ 6.51	149.31
2	144.7	143.09	− 8.83	+8.67	+0.44	+6.13	+ 6.41	149.50
27	147.7	146.05	− 8.48	+8.65	+0.02	+3.35	+ 3.54	149.59
May 4	148.1	146.45	− 8.39	+8.64	−0.12	+2.44	+ 2.57	149.02
9	149.0	147.34	− 8.32	+8.63	−0.21	+1.78	+ 1.88	149.22
18	150.8	149.12	− 8.19	+8.62	−0.36	+0.56	+ 0.63	149.75
19	149.5	147.83	− 8.18	+8.62	−0.37	+0.42	+ 0.49	148.32
21	152.0	150.31	− 8.15	+8.61	−0.40	+0.14	+ 0.20	150.51
June 16	154.0	152.28	− 7.80	+8.58	−0.57	−3.30	− 3.09	149.19
18	155.2	153.47	− 7.77	+8.58	−0.57	−3.55	− 3.31	150.16
23	156.0	154.26	− 7.70	+8.57	−0.54	−4.14	− 3.81	150.45
28	156.0	154.26	− 7.63	+8.56	−0.51	−4.72	− 4.30	149.96
July 3	156.2	154.46	− 7.56	+8.56	−0.45	−5.26	− 4.71	149.75

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 July 4	156.8	155.05	−7″.55	+8″.56	−0″.44	−5″.36	− 4″.79	150″.26
5	155.0	153.27	−7.53	+8.55	−0.43	−5.46	− 4.87	148.40
6	156.5	154.75	−7.52	+8.55	−0.42	−5.56	− 4.95	149.80
15	155.0	153.27	−7.39	+8.54	−0.29	−6.36	− 5.50	147.77
16	155.5	153.76	−7.38	+8.54	−0.28	−6.48	− 5.60	148.16
17	156.0	154.26	−7.36	+8.54	−0.27	−6.56	− 5.65	148.61
23	155.5	153.76	−7.28	+8.52	−0.15	−7.02	− 5.93	147.83
24	156.0	154.26	−7.27	+8.52	−0.13	−7.09	− 5.97	148.29
30	156.7	154.95	−7.19	+8.51	−0.02	−7.46	− 6.16	148.79
31	155.5	153.76	−7.18	+8.51	0.00	−7.52	− 6.19	147.57
Aug. 7	155.5	153.76	−7.08	+8.49	+0.13	−7.84	− 6.30	147.46
9	155.8	154.06	−7.05	+8.49	+0.17	−7.92	− 6.31	147.75
14	154.5	152.77	−6.98	+8.48	+0.26	−8.06	− 6.30	146.47
Sept. 2	153.7	151.99	−6.71	+8.44	+0.51	−8.05	− 5.81	146.18
6	153.5	151.79	−6.66	+8.43	+0.54	−8.00	− 5.69	146.10
7	153.5	151.79	−6.65	+8.43	+0.55	−7.97	− 5.64	146.15
11	153.5	151.79	−6.60	+8.42	+0.56	−7.83	− 5.45	146.34
Oct. 3	152.0	150.31	−6.29	+8.38	+0.47	−6.40	− 3.84	146.47
7	149.0	147.34	−6.23	+8.37	+0.43	−6.03	− 3.46	143.88
11	148.7	147.04	−6.17	+8.36	+0.37	−5.64	− 3.08	143.96
12	149.5	147.83	−6.16	+8.36	+0.36	−5.54	− 2.98	144.85
Nov. 27	146.5	144.86	−5.54	+8.24	−0.46	+0.50	+ 2.74	147.60
30	146.0	144.37	−5.50	+8.23	−0.49	+0.93	+ 3.17	147.54
Dec. 12	144.5	142.89	−5.33	+8.20	−0.56	+2.62	+ 4.93	147.82
20	142.3	140.72	−5.22	+8.18	−0.56	+3.69	+ 6.09	146.81
24	142.0	140.42	−5.16	+8.17	−0.54	+4.20	+ 6.67	147.09
27	141.0	139.43	−5.12	+8.16	−0.52	+4.57	+ 7.09	146.52
1729 Jan. 4	141.0	139.43	−4.98	+8.14	−0.42	+5.60	+ 8.34	147.77
30	138.4	136.86	−4.63	+8.06	+0.06	+7.67	+11.16	148.02
Feb. 5	138.0	136.46	−4.56	+8.04	+0.18	+7.93	+11.59	148.05
12	137.0	135.47	−4.45	+8.01	+0.30	+8.11	+11.97	147.44
17	137.2	135.67	−4.38	+8.00	+0.38	+8.17	+12.17	147.84
18	137.8	136.26	−4.37	+7.99	+0.40	+8.18	+12.20	148.46
23	137.0	135.47	−4.29	+7.98	+0.46	+8.17	+12.32	147.79
25	137.7	136.16	−4.26	+7.97	+0.48	+8.15	+12.34	148.50
26	136.7	135.18	−4.25	+7.97	+0.49	+8.13	+12.34	147.52
Mar. 7	136.3	134.79	−4.12	+7.94	+0.56	+7.89	+12.27	147.06
8	137.3	135.77	−4.11	+7.94	+0.56	+7.85	+12.24	148.01
9	137.5	135.96	−4.09	+7.93	+0.57	+7.81	+12.22	148.18
10	137.3	135.77	−4.08	+7.93	+0.57	+7.76	+12.18	147.95
11	138.0	136.46	−4.07	+7.93	+0.58	+7.71	+12.15	148.61
20	137.7	136.16	−3.95	+7.90	+0.56	+7.20	+11.71	147.87
21	138.0	136.46	−3.94	+7.90	+0.56	+7.13	+11.65	148.11
Apr. 5	139.0	137.45	−3.73	+7.85	+0.40	+5.87	+10.39	147.84
29	143.0	141.41	−3.40	+7.75	−0.02	+3.13	+ 7.46	148.87
May 25	146.0	144.37	−3.02	+7.66	−0.45	−0.37	+ 3.82	148.19
June 6	148.4	146.75	−2.87	+7.61	−0.55	−1.98	+ 2.21	148.96
11	149.0	147.34	−2.81	+7.59	−0.57	−2.64	+ 1.57	148.91
14	148.7	147.04	−2.77	+7.58	−0.57	−3.02	+ 1.22	148.26
15	149.2	147.54	−2.76	+7.58	−0.57	−3.14	+ 1.11	148.65
17	149.5	147.83	−2.73	+7.57	−0.57	−3.38	+ 0.89	148.72
18	150.0	148.33	−2.72	+7.57	−0.57	−3.51	+ 0.77	149.10

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1729 July 1	150.5	148.82	−2.″53	+7.″51	−0.″48	−5.″02	− 0.″52	148.″30
4	150.2	148.53	−2.49	+7.50	−0.45	−5.33	− 0.77	147.76
5	150.0	148.33	−2.48	+7.50	−0.44	−5.44	− 0.86	147.47
7	151.0	149.32	−2.45	+7.49	−0.41	−5.63	− 1.00	148.32
10	148.5	146.84	−2.42	+7.48	−0.37	−5.93	− 1.24	145.60
11	152.0	150.31	−2.41	+7.47	−0.36	−6.02	− 1.32	148.99
12	151.0	149.32	−2.39	+7.47	−0.34	−6.11	− 1.37	147.95
23	153.5	151.79	−2.22	+7.43	−0.15	−7.00	− 1.94	149.85
25	153.5	151.79	−2.19	+7.42	−0.12	−7.13	− 2.02	149.77
Aug. 1	152.7	151.00	−2.11	+7.39	+0.01	−7.55	− 2.26	148.74
18	152.5	150.80	−1.87	+7.31	+0.32	−8.13	− 2.37	148.43
22	150.8	149.12	−1.81	+7.30	+0.37	−8.18	− 2.32	146.80
24	150.5	148.82	−1.78	+7.29	+0.41	−8.18	− 2.26	146.56
31	152.0	150.31	−1.69	+7.25	+0.49	−8.14	− 2.09	148.22
Sept. 2	150.5	148.82	−1.66	+7.24	+0.51	−8.10	− 2.01	146.81
4	152.3	150.61	−1.63	+7.23	+0.52	−8.06	− 1.94	148.67
11	149.5	147.83	−1.54	+7.21	+0.56	−7.84	− 1.61	146.22
12	147.5	145.85	−1.53	+7.20	+0.57	−7.79	− 1.55	144.30
13	149.2	147.54	−1.51	+7.20	+0.57	−7.75	− 1.49	146.05
14	148.5	146.84	−1.50	+7.19	+0.57	−7.71	− 1.45	145.39
20	149.7	148.03	−1.42	+7.17	+0.57	−7.38	− 1.06	146.97
30	149.0	147.34	−1.28	+7.12	+0.51	−6.67	− 0.32	147.02
Oct. 19	146.5	144.86	−1.02	+7.03	+0.24	−4.80	+ 1.45	146.31
31	146.0	144.37	−0.85	+6.98	+0.01	−3.32	+ 2.82	147.19
Dec. 6	142.5	140.91	−0.36	+6.80	−0.55	+1.75	+ 7.64	148.55
13	140.2	138.64	−0.26	+6.76	−0.57	+2.72	+ 8.65	147.29
21	138.7	137.15	−0.15	+6.72	−0.56	+3.79	+ 9.80	146.95
1730 Feb. 11	135.3	133.80	+0.58	+6.44	+0.28	+8.09	+15.39	149.19
Mar. 4	133.5	132.01	+0.87	+6.33	+0.54	+8.00	+15.74	147.75
7	134.0	132.51	+0.91	+6.31	+0.56	+7.90	+15.68	148.19
14	134.2	132.71	+1.00	+6.27	+0.57	+7.57	+15.41	148.12
June 5	142.3	140.72	+2.15	+5.79	−0.54	−1.81	+ 5.59	146.31
7	144.7	143.09	+2.18	+5.78	−0.55	−2.08	+ 5.33	148.42
17	146.0	144.37	+2.31	+5.72	−0.57	−3.36	+ 4.10	148.47
30	148.0	146.35	+2.51	+5.64	−0.50	−4.88	+ 2.77	149.12
July 25	149.3	147.64	+2.84	+5.49	−0.12	−7.11	+ 1.10	148.74
26	148.5	146.84	+2.85	+5.48	−0.09	−7.18	+ 1.06	147.90
28	150.2	148.53	+2.88	+5.47	−0.06	−7.31	+ 0.98	149.51
Aug. 5	149.0	147.34	+2.99	+5.42	+0.09	−7.73	+ 0.77	148.11
16	149.0	147.34	+3.14	+5.35	+0.29	−8.09	+ 0.69	148.03
17	148.5	146.84	+3.15	+5.34	+0.31	−8.11	+ 0.69	147.53
20	148.5	146.84	+3.20	+5.32	+0.35	−8.16	+ 0.71	147.55
23	147.5	145.85	+3.24	+5.31	+0.39	−8.18	+ 0.76	146.61
24	149.0	147.34	+3.25	+5.30	+0.41	−8.18	+ 0.78	148.12
27	148.0	146.35	+3.29	+5.28	+0.45	−8.17	+ 0.85	147.20
29	147.0	145.36	+3.32	+5.27	+0.47	−8.16	+ 0.90	146.26
31	146.5	144.86	+3.35	+5.25	+0.49	−8.14	+ 0.95	145.81
Sept. 4	147.3	145.66	+3.41	+5.23	+0.52	−8.06	+ 1.10	146.76
6	146.5	144.86	+3.44	+5.22	+0.54	−8.01	+ 1.19	146.05
9	146.5	144.86	+3.47	+5.20	+0.56	−7.92	+ 1.31	146.17
19	147.7	146.05	+3.61	+5.13	+0.57	−7.46	+ 1.85	147.90
1731 Jan. 4	135.5	133.99	+5.09	+4.40	−0.41	+5.54	+14.62	148.61
7	135.3	133.80	+5.13	+4.38	−0.37	+5.85	+14.99	148.79

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1731 Jan. 14	134.5	133.00	+ 5″.26	+4″.32	−0″.25	+6″.51	+15″.84	148″.84
29	133.7	132.21	+ 5.44	+4.21	+0.03	+7.59	+17.27	149.48
Feb. 4	133.5	132.01	+ 5.51	+4.16	+0.15	+7.89	+17.69	149.70
16	134.0	132.51	+ 5.68	+4.06	+0.36	+8.16	+18.26	150.77
17	131.5	130.03	+ 5.69	+4.05	+0.37	+8.16	+18.27	148.30
May 8	138.2	136.66	+ 6.88	+3.47	−0.18	+2.02	+12.19	148.85
Aug. 20	146.0	144.37	+ 8.23	+2.78	+0.35	−8.15	+ 3.21	147.58
21	146.5	144.86	+ 8.24	+2.77	+0.36	−8.16	+ 3.21	148.07
28	146.5	144.86	+ 8.34	+2.73	+0.46	−8.17	+ 3.36	148.22
30	146.0	144.37	+ 8.37	+2.72	+0.47	−8.16	+ 3.40	147.77
31	145.5	143.88	+ 8.38	+2.71	+0.48	−8.14	+ 3.43	147.31
Sept. 1	145.7	144.08	+ 8.40	+2.71	+0.49	−8.13	+ 3.47	147.55
20	146.5	144.86	+ 8.66	+2.59	+0.56	−7.42	+ 4.39	149.25
21	144.5	142.89	+ 8.67	+2.58	+0.56	−7.36	+ 4.45	147.34
23	145.3	143.69	+ 8.69	+2.57	+0.55	−7.23	+ 4.58	148.27
Oct. 3	145.5	143.88	+ 8.84	+2.52	+0.48	−6.47	+ 5.37	149.25
1732 Jan. 15	134.0	132.51	+10.30	+1.62	−0.22	+6.74	+18.44	150.95
19	134.0	132.51	+10.35	+1.59	−0.14	+7.05	+18.85	151.36
Apr. 18	133.8	132.31	+11.58	+0.83	+0.18	+4.45	+17.04	149.35
28	138.0	136.46	+11.72	+0.75	0.00	+3.23	+15.70	152.16
May 3	136.5	134.98	+11.78	+0.70	−0.10	+2.53	+14.91	149.89
1733 Feb. 11	127.2	125.79	+15.68	−1.65	+0.28	+8.09	+22.40	148.19
1734 June 22	139.0	137.45	+22.51	−5.35	−0.55	−3.95	+12.66	150.11
23	139.0	137.45	+22.52	−5.36	−0.55	−4.07	+12.54	149.99
July 14	139.5	137.94	+22.82	−5.50	−0.31	−6.25	+10.76	148.70
22	140.5	138.93	+22.93	−5.56	−0.17	−6.90	+10.30	149.23
27	140.0	138.44	+23.00	−5.59	−0.08	−7.23	+10.10	148.54
Aug. 14	137.0	135.47	+23.24	−5.70	+0.25	−8.04	+ 9.75	145.22
17	140.0	138.44	+23.28	−5.72	+0.31	−8.10	+ 9.77	148.21
18	139.2	137.65	+23.29	−5.72	+0.32	−8.12	+ 9.77	147.42
1735 Jan. 2	124.0	122.62	+25.16	−6.56	−0.45	+5.30	+23.45	146.07
5	125.7	124.30	+25.21	−6.58	−0.41	+5.65	+23.87	148.17
1737 Jan. 20	115.8	114.51	+35.46	−6.66	−0.15	+7.02	+35.67	150.18
29	114.5	113.22	+35.57	−6.71	+0.03	+7.59	+36.48	149.70
30	115.2	113.92	+35.58	−6.71	+0.06	+7.65	+36.58	150.50
1738 June 30	120.0	118.66	+42.64	−8.02	−0.50	−4.86	+29.26	147.92
July 11	120.0	118.66	+42.80	−7.98	−0.36	−5.97	+28.49	147.15
1739 Jan. 10	107.2	106.01	+45.29	−7.19	−0.34	+6.12	+43.88	149.89
25	100.0	98.89	+45.40	−7.11	−0.05	+7.32	+45.56	144.45
Feb. 13	102.3	101.16	+45.75	−7.01	+0.31	+8.11	+47.16	148.32
14	102.0	100.86	+45.76	−7.00	+0.33	+8.12	+47.21	148.07
15	101.7	100.57	+45.78	−7.00	+0.34	+8.13	+47.25	147.82
17	102.2	101.06	+45.81	−6.99	+0.37	+8.15	+47.34	148.40
1740 Jan. 31	96.8	95.72	+50.56	−4.88	+0.10	+7.75	+53.53	149.25
Feb. 9	98.3	97.21	+50.69	−4.82	+0.27	+8.06	+54.20	151.41
June 13	106.0	104.82	+52.39	−3.94	−0.57	−2.89	+44.99	149.81
1741 Feb. 6	90.7	89.69	+55.61	−1.62	+0.20	+7.93	+62.12	151.81

TABLE V.—*Reduction of the Wanstead Observations.*

18 CAMELOPARDI.

Assuming $P = 35° 0' - 43''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 25	32.2	31.84	− 9.″46	+8.″78	+0.″55	−10.″75	−10.″88	42.″72
Oct. 8	33.0	32.63	− 9.31	+8.79	+0.44	− 9.60	− 9.68	42.31
24	36.4	36.00	− 9.13	+8.79	+0.18	− 7.54	− 7.70	43.70
31	38.4	37.98	− 9.05	+8.79	+0.04	− 6.45	− 6.67	44.65
Dec. 3	43.3	42.82	− 8.68	+8.77	−0.51	− 0.16	− 0.58	43.40
1728 Jan. 1	50.3	49.74	− 8.30	+8.76	−0.47	+ 5.97	+ 5.96	43.78
23	54.0	53.40	− 8.05	+8.74	−0.11	+ 9.22	+ 9.80	43.60
27	55.0	54.39	− 8.00	+8.74	−0.03	+ 9.68	+10.39	44.00
Feb. 4	55.0	54.39	− 7.91	+8.73	+0.13	+10.45	+11.40	42.99
7	54.7	54.09	− 7.88	+8.73	+0.18	+10.68	+11.71	42.38
13	56.0	55.38	− 7.81	+8.72	+0.31	+11.04	+12.26	43.12
14	56.0	55.38	− 7.80	+8.72	+0.33	+11.10	+12.35	43.03
16	57.0	56.37	− 7.78	+8.72	+0.36	+11.18	+12.48	43.89
29	57.0	56.37	− 7.76	+8.71	+0.51	+11.44	+13.02	43.35
Mar. 3	57.3	56.67	− 7.61	+8.70	+0.53	+11.43	+13.05	43.62
Sept. 24	33.0	32.63	− 5.29	+8.34	+0.56	−10.78	− 7.17	39.80
29	35.0	34.61	− 5.23	+8.33	+0.53	−10.39	− 6.76	41.37
Oct. 3	37.0	36.59	− 5.19	+8.32	+0.49	−10.04	− 6.42	43.01
7	35.0	34.61	− 5.15	+8.31	+0.45	− 9.67	− 6.04	40.65
11	34.0	33.62	− 5.10	+8.30	+0.40	− 9.19	− 5.59	39.21
12	37.5	37.08	− 5.09	+8.30	+0.38	− 9.08	− 5.49	42.57
1729 Sept. 30	41.0	40.54	− 1.17	+6.94	+0.52	−10.33	− 4.04	44.58
Oct. 10	40.0	39.55	− 0.95	+6.89	+0.41	− 9.33	− 2.98	42.53
19	42.5	42.02	− 0.84	+6.85	+0.27	− 8.29	− 2.01	44.03
Dec. 21	53.5	52.90	− 0.12	+6.52	−0.56	+ 3.47	+ 9.31	43.59
1733 Feb. 11	65.0	64.28	+12.90	−2.02	+0.26	+10.85	+21.99	42.29
1739 Jan. 11	83.0	82.08	+37.20	−6.99	−0.34	+ 7.29	+37.16	44.92
25	85.3	84.35	+37.36	−6.91	−0.07	+ 9.27	+39.65	44.70
Feb. 15	86.3	85.34	+37.59	−6.80	+0.34	+11.03	+42.16	43.18
1740 Jan. 31	92.0	90.98	+41.53	−4.59	+0.06	+10.05	+47.05	42.93
Feb. 9	91.5	90.48	+41.63	−4.53	+0.24	+10.79	+48.13	42.35

δ AURIGÆ.

Assuming $P = 35° 45' + 13''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 25	18.4	18.20	−4.″89	+8.″83	+0.″57	−10.″26	− 5.″75	12.″45
Oct. 8	17.0	16.81	−4.82	+8.83	+0.48	− 9.59	− 5.10	11.71
1728 Jan. 23	2.0	1.98	−4.15	+8.69	−0.16	+ 7.21	+11.59	13.57
27	1.5	1.48	−4.12	+8.68	−0.08	+ 7.72	+12.20	13.68
Feb. 4	0.0	0.00	−4.07	+8.67	+0.08	+ 8.63	+13.31	13.31
7	0.5	0.49	−4.05	+8.66	+0.14	+ 8.92	+13.67	13.18
13	1.7	1.68	−4.03	+8.65	+0.25	+ 9.44	+14.31	12.63
14	1.0	0.99	−4.02	+8.64	+0.27	+ 9.52	+14.41	13.42

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 Feb. 15	2.0	1.98	− 4.″02	+8.″64	+0.″29	+ 9.″59	+14.″50	12.″52
16	1.2	1.18	− 4.01	+8.64	+0.31	+ 9.67	+14.61	13.43
29	3.5	3.46	− 3.94	+8.61	+0.48	+10.26	+15.41	11.95
Mar. 3	2.3	2.28	− 3.93	+8.61	+0.50	+10.29	+15.47	13.19
13	2.4	2.38	− 3.87	+8.59	+0.57	+10.34	+15.63	13.25
Sept. 24	19.5	19.28	− 2.73	+8.08	+0.57	−10.43	− 4.51	14.77
29	17.5	17.38	− 2.70	+8.06	+0.55	−10.11	− 4.20	13.10
Oct. 7	18.8	18.59	− 2.65	+8.04	+0.49	− 9.61	− 3.73	14.86
12	17.8	17.60	− 2.62	+8.02	+0.43	− 9.31	− 3.48	14.12
1729 Jan. 4	2.0	1.98	− 2.12	+7.76	−0.48	+ 4.10	+ 9.26	11.24
Mar. 8	4.7	4.65	− 1.75	+7.49	+0.54	+10.40	+16.68	12.03
11	4.5	4.45	− 1.73	+7.48	+0.56	+10.42	+16.73	12.28
20	4.5	4.45	− 1.67	+7.44	+0.58	+10.29	+16.64	12.19
Oct. 1	17.0	16.81	− 0.54	+6.47	+0.54	− 9.99	− 3.52	13.29
5	16.5	16.31	− 0.51	+6.45	+0.51	− 9.77	− 3.32	12.99
19	15.0	14.83	− 0.43	+6.37	+0.33	− 8.62	− 2.35	12.48
Dec. 21	5.5	5.43	− 0.06	+6.00	−0.57	+ 1.39	+ 6.76	12.19
1730 Mar. 14	3.5	3.46	+ 0.43	+5.48	+0.57	+10.41	+16.89	13.43
1733 Feb. 11	2.0	1.98	+ 6.64	−2.83	+0.20	+ 9.16	+13.17	11.19
1739 Jan. 10	1.3	1.29	+19.05	−6.51	−0.41	+ 4.95	+17.08	15.78
25	5.0	4.94	+19.14	−6.42	−0.14	+ 7.20	+19.78	14.84
Feb. 13	7.0	6.92	+19.24	−6.30	+0.24	+ 9.27	+22.45	15.53
15	7.3	7.22	+19.25	−6.29	+0.27	+ 9.42	+22.65	15.43
17	6.8	6.72	+19.27	−6.28	+0.31	+ 9.57	+22.87	16.15
1740 Jan. 31	9.0	8.90	+21.25	−3.90	−0.02	+ 8.16	+25.49	16.59
1747 Mar. 10	39.2	38.77	+36.78	+8.28	+0.56	+10.38	+56.03	17.26

35 CAMELOPARDI.

Assuming $P = 38^\circ\,25' + 72''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 25	76.3	75.45	−3.″24	+8.″83	+0.″57	−9.″45	− 3.″29	72.″16
Oct. 24	74.3	73.48	−3.12	+8.82	+0.26	−7.64	− 1.68	71.80
31	74.4	73.58	−3.09	+8.81	+0.12	−6.89	− 1.05	72.53
Dec. 3	69.8	69.02	−2.97	+8.76	−0.47	−2.16	+ 3.16	72.18
23	67.2	66.45	−2.89	+8.73	−0.57	+1.15	+ 6.42	72.87
1728 Jan. 1	65.1	64.38	−2.84	+8.72	−0.53	+2.88	+ 8.23	72.61
23	61.5	60.81	−2.75	+8.68	−0.21	+6.12	+11.84	72.65
27	60.5	59.82	−2.73	+8.67	−0.13	+6.66	+12.47	72.29
Feb. 4	58.0	57.35	−2.70	+8.66	+0.03	+7.54	+13.53	70.88
7	58.7	58.04	−2.69	+8.65	+0.09	+7.82	+13.87	71.91
13	59.3	58.64	−2.68	+8.64	+0.21	+8.36	+14.53	73.17
14	58.7	58.04	−2.67	+8.64	+0.23	+8.44	+14.64	72.68
15	57.0	56.37	−2.67	+8.64	+0.24	+8.52	+14.73	71.10
16	59.8	59.13	−2.67	+8.63	+0.26	+8.60	+14.82	73.95
29	57.2	56.57	−2.61	+8.61	+0.46	+9.31	+15.77	72.34
Mar. 3	57.2	56.57	−2.60	+8.60	+0.49	+9.41	+15.90	72.47
12	58.4	57.75	−2.56	+8.59	+0.56	+9.55	+16.14	73.89

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 Mar. 13	58.5	57.84	− 2.″56	+8.″59	+0.″56	+9.″55	+16.″14	73.″98
Sept. 24	75.8	74.95	− 1.81	+8.06	+0.57	−9.46	− 2.64	72.31
Oct. 7	76.0	75.15	− 1.76	+8.01	+0.50	−8.92	− 2.17	72.98
12	74.5	73.67	− 1.74	+7.99	+0.44	−8.60	− 1.91	71.76
1729 Jan. 4	63.0	62.30	− 1.39	+7.68	−0.48	+3.41	+ 9.22	71.52
Mar. 8	56.5	55.87	− 1.16	+7.41	+0.53	+9.51	+16.29	72.16
9	57.0	56.37	− 1.15	+7.41	+0.54	+9.53	+16.33	72.70
11	56.8	56.17	− 1.14	+7.40	+0.56	+9.54	+16.36	72.53
Sept. 30	77.5	76.63	− 0.36	+6.37	+0.55	−9.28	− 2.72	73.91
Oct. 1	76.0	75.15	− 0.35	+6.36	+0.54	−9.25	− 2.70	72.45
5	75.3	74.46	− 0.34	+6.34	+0.51	−9.16	− 2.65	71.81
10	76.0	75.15	− 0.32	+6.31	+0.46	−8.76	− 2.31	72.84
19	74.5	73.67	− 0.28	+6.26	+0.34	−8.09	− 1.77	71.90
Dec. 21	66.2	65.46	− 0.04	+5.88	−0.57	+0.91	+ 6.18	71.64
1730 Mar. 14	58.4	57.75	+ 0.28	+5.35	+0.57	+9.55	+15.75	73.50
1731 Feb. 16	59.7	59.03	+ 1.59	+2.89	+0.28	+8.60	+13.36	72.39
1739 Jan. 10	62.5	61.80	+12.48	−6.40	−0.41	+4.25	+ 9.92	71.72
25	60.2	59.53	+12.54	−6.31	−0.15	+6.37	+12.45	71.98
Feb. 13	58.0	57.35	+12.61	−6.19	+0.23	+8.27	+14.92	72.27
15	57.5	56.86	+12.62	−6.18	+0.26	+8.51	+15.21	72.07
17	57.2	56.57	+12.62	−6.17	+0.30	+8.66	+15.41	71.98
1740 Jan. 31	56.6	55.97	+14.10	−3.76	−0.05	+7.06	+17.35	73.32
1747 Mar. 10	32.7	32.33	+23.28	+8.22	+0.55	+9.52	+41.57	73.90

46 AURIGÆ.

Assuming $P = 40° 35' + 24''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 25	22.8	22.54	+0.″99	+8.″76	+0.″57	−8.″85	+ 1.″47	24.″01
Oct. 4	23.3	23.04	+0.98	+8.75	+0.54	−8.76	+ 1.51	24.55
8	23.5	23.23	+0.98	+8.74	+0.52	−8.66	+ 1.58	24.81
Dec. 3	18.4	18.20	+0.91	+8.65	−0.43	−3.29	+ 5.84	24.04
23	16.2	16.02	+0.88	+8.61	−0.54	−0.23	+ 8.72	24.74
24	15.2	15.03	+0.88	+8.61	−0.54	−0.07	+ 8.88	23.91
1728 Jan. 23	12.2	12.07	+0.86	+8.54	−0.25	+4.56	+13.71	25.72
27	11.3	11.18	+0.85	+8.53	−0.17	+5.19	+14.40	25.58
Feb. 4	9.7	9.59	+0.85	+8.52	−0.01	+6.05	+15.41	25.00
7	10.0	9.89	+0.84	+8.51	+0.05	+6.40	+15.80	25.69
14	8.8	8.70	+0.84	+8.49	+0.15	+7.10	+16.58	25.28
15	8.0	7.91	+0.83	+8.49	+0.17	+7.19	+16.68	24.59
29	7.5	7.41	+0.82	+8.45	+0.44	+8.23	+17.94	25.35
Mar. 3	7.5	7.41	+0.81	+8.45	+0.47	+8.39	+18.12	25.53
12	7.2	7.12	+0.80	+8.42	+0.55	+8.73	+18.50	25.62
13	6.0	5.93	+0.80	+8.42	+0.56	+8.78	+18.56	24.49
Oct. 7	25.0	24.72	+0.55	+7.75	+0.52	−8.67	+ 0.15	24.87
1729 Mar. 9	8.0	7.91	+0.36	+7.06	+0.53	+8.63	+16.58	24.49
11	8.3	8.21	+0.36	+7.05	+0.55	+8.69	+16.65	24.86
Dec. 21	19.7	19.48	+0.01	+5.42	−0.57	−1.18	+ 3.68	23.16

TABLE V.—*Reduction of the Wanstead Observations.*

β URSÆ MAJ.

Assuming $P = 32° 15' - 360''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Notation	Aberration	Sum	Reduced to 1730
1727 Sept. 26	410.0	405.43	+ 43.91	+1.85	+0.23	− 1.32	+ 44.67	360.76
Nov. 2	398.5	394.06	+ 41.95	+1.63	+0.52	−10.74	+ 33.36	360.70
7	396.5	392.08	+ 41.69	+1.60	+0.51	−11.77	+ 32.03	360.05
28	391.5	387.13	+ 40.58	+1.47	+0.26	−15.02	+ 27.29	359.84
Dec. 24	391.0	386.64	+ 39.21	+1.31	−0.21	−16.22	+ 24.09	362.55
25	389.8	385.46	+ 39.16	+1.30	−0.23	−16.20	+ 24.03	361.43
1728 Jan. 9	387.8	383.48	+ 38.32	+1.20	−0.44	−15.54	+ 23.54	359.94
17,18	388.0	383.68	+ 37.89	+1.15	−0.50	−14.37	+ 24.17	359.43
27	389.0	384.67	+ 37.36	+1.09	−0.53	−12.66	+ 25.26	359.41
Feb. 28	397.0	392.58	+ 35.67	+0.89	−0.20	− 5.26	+ 31.10	361.48
Mar. 3	397.2	392.78	+ 35.45	+0.87	−0.13	− 4.04	+ 32.15	360.63
16	400.0	395.54	+ 34.77	+0.79	+0.11	− 0.42	+ 35.25	360.29
24	402.3	397.82	+ 34.35	+0.73	+0.25	+ 1.81	+ 37.14	360.68
28	403.1	398.61	+ 34.14	+0.71	+0.31	+ 2.95	+ 38.11	360.50
Apr. 4	406.0	401.48	+ 33.77	+0.67	+0.40	+ 4.80	+ 39.64	361.84
28	408.0	403.46	+ 32.50	+0.52	+0.53	+10.56	+ 44.11	359.35
29	409.4	404.84	+ 32.45	+0.51	+0.53	+10.76	+ 44.25	360.59
May 7	411.7	407.11	+ 32.02	+0.48	+0.49	+12.30	+ 45.29	361.82
18	411.0	406.42	+ 31.44	+0.39	+0.38	+14.06	+ 46.27	360.15
June 19	411.5	406.91	+ 29.74	+0.19	−0.14	+16.25	+ 46.04	360.87
July 5	409.5	404.93	+ 28.89	+0.09	−0.38	+15.67	+ 44.27	360.66
Aug. 16	400.5	396.03	+ 26.67	−0.17	−0.43	+ 9.18	+ 35.25	360.78
Sept. 4	393.3	388.92	+ 25.72	−0.28	−0.18	+ 4.45	+ 29.71	359.21
22	388.0	383.68	+ 24.72	−0.40	+0.16	− 0.42	+ 24.06	359.62
24	388.5	384.17	+ 24.61	−0.41	+0.19	− 0.97	+ 23.42	360.75
28	387.5	383.18	+ 24.40	−0.44	+0.26	− 2.10	+ 22.12	361.06
Oct. 1	386.3	382.00	+ 24.24	−0.46	+0.30	− 2.91	+ 21.17	360.83
23	378.5	374.28	+ 23.07	−0.59	+0.52	− 8.63	+ 14.37	359.91
24	378.0	373.79	+ 23.02	−0.60	+0.52	− 8.87	+ 14.07	359.72
Dec. 4	369.3	365.18	+ 20.86	−0.86	+0.16	−15.65	+ 4.51	360.67
5	369.5	365.38	+ 20.81	−0.87	+0.14	−15.71	+ 4.37	361.01
18	368.5	364.39	+ 20.12	−0.94	−0.10	−16.19	+ 2.89	361.50
1729 Mar. 20	379.7	375.47	+ 15.19	−1.28	+0.19	+ 0.61	+ 14.71	360.76
May 22	391.0	386.64	+ 11.86	−1.29	+0.33	+14.56	+ 25.46	361.18
June 10	391.0	386.64	+ 10.85	−2.02	+0.02	+16.08	+ 24.93	361.71
11	391.0	386.64	+ 10.80	−2.03	0.00	+16.12	+ 24.89	361.75
15	389.0	384.67	+ 10.59	−2.05	−0.07	+16.22	+ 24.69	359.98
21	388.0	383.68	+ 10.27	−2.09	−0.17	+16.25	+ 24.26	359.42
1730 June 6	368.5	364.39	− 8.36	−4.07	+0.09	+15.87	+ 3.53	360.86
1732 Sept. 14	306.5	303.09	− 52.38	−6.87	+0.01	+ 1.81	− 57.43	360.51
17	305.3	301.90	− 52.54	−6.87	+0.07	+ 0.96	− 58.38	360.28
1735 Sept. 24	249.3	246.53	−110.03	−4.59	+0.19	− 0.75	−115.18	361.71

TABLE V.—*Reduction of the Wanstead Observations.*

ψ URSÆ MAJ.

Assuming $P = 44° 0' + 65''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Nov. 7	30.7	30.36	+41.″58	+1.″26	+0.″52	− 8.″33	+35.″03	65.″39
28	36.5	36.09	+40.47	+1.13	+0.27	−11.85	+30.02	66.11
Dec. 24	42.4	41.93	+39.10	+0.96	−0.19	−14.01	+25.86	67.79
25	40.7	40.24	+39.05	+0.95	−0.21	−14.03	+25.76	66.00
1728 Jan. 9	42.5	42.02	+38.21	+0.86	−0.43	−13.83	+24.81	66.83
17,18	42.6	42.12	+37.78	+0.81	−0.50	−13.31	+24.79	66.90
27	41.0	40.54	+37.25	+0.75	−0.53	−12.29	+25.18	65.72
Feb. 7	40.5	40.04	+36.68	+0.68	−0.48	−10.73	+26.15	66.19
28	38.3	37.88	+35.57	+0.55	−0.22	− 6.73	+29.17	67.05
Mar. 3	35.5	35.10	+35.35	+0.52	−0.16	− 5.73	+29.98	65.08
16	33.2	32.83	+34.68	+0.44	+0.08	− 2.83	+32.37	65.20
24	31.8	31.44	+34.25	+0.39	+0.23	− 0.92	+33.95	65.39
28	30.6	30.25	+34.04	+0.37	+0.24	+ 0.06	+34.71	64.96
Apr. 4	29.3	28.98	+33.67	+0.33	+0.38	+ 1.75	+36.13	65.11
27	24.5	24.22	+32.46	+0.18	+0.53	+ 6.94	+40.11	64.33
28	23.0	22.74	+32.41	+0.17	+0.53	+ 7.14	+40.25	62.99
29	25.0	24.72	+32.35	+0.16	+0.53	+ 7.34	+40.38	65.10
May 7	22.7	22.44	+31.93	+0.14	+0.50	+ 8.90	+41.47	63.91
18	23.5	23.23	+31.35	+0.05	+0.36	+10.75	+42.51	65.74
Dec. 4	57.5	56.86	+21.97	−1.18	+0.17	−12.68	+ 8.28	65.14
18	60.0	59.33	+20.05	−1.27	−0.08	−13.80	+ 4.90	64.23

γ URSÆ MAJ.

Assuming $P = 34° 45' + 95''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 26	48.7	48.16	+45.″34	−0.″22	+0.″10	+ 2.″64	+47.″86	96.″02
Oct. 5	51.7	51.12	+44.85	−0.27	+0.25	+ 0.05	+44.88	96.00
27	58.3	57.65	+43.65	−0.41	+0.51	− 6.23	+37.52	95.17
Nov. 2	60.5	59.82	+43.32	−0.45	+0.52	− 7.84	+35.55	95.37
7	61.5	60.81	+43.04	−0.48	+0.53	− 9.12	+33.97	94.78
28	68.7	67.93	+41.90	−0.60	+0.37	−13.63	+28.04	95.97
Dec. 17	72.5	71.69	+40.87	−0.72	+0.05	−16.15	+24.05	95.74
24	72.0	71.20	+40.48	−0.76	−0.08	−16.63	+23.01	94.21
25	73.0	72.19	+40.43	−0.77	−0.10	−16.68	+22.88	95.07
1728 Jan. 9	75.0	74.16	+39.55	−0.86	−0.35	−16.73	+21.61	95.77
18	74.7	73.87	+39.05	−0.92	−0.48	−16.17	+21.48	95.35
Feb. 7	73.0	72.19	+37.96	−1.04	−0.53	−13.51	+22.88	95.07
28	70.6	69.81	+36.82	−1.16	−0.32	− 8.95	+26.39	96.20
Mar. 28	62.7	62.00	+35.23	−1.34	+0.18	− 0.98	+33.09	95.09
Apr. 2	59.2	58.54	+34.96	−1.37	+0.24	+ 0.49	+34.32	92.86
4	59.3	58.64	+34.85	−1.38	+0.27	+ 1.06	+34.80	93.44
13	56.6	55.97	+34.36	−1.43	+0.41	+ 3.63	+36.97	92.94
27	55.6	54.98	+33.59	−1.52	+0.52	+ 7.39	+39.98	94.96

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 Apr. 28	56.0	55.38	+ 33.″53	−1.″53	+0.″52	+ 7.″64	+ 40.″16	95.″54
May 7	52.5	51.91	+ 33.04	−1.57	+0.52	+ 9.83	+ 41.82	93.73
18	54.2	53.60	+ 32.45	−1.63	+0.46	+12.18	+ 43.46	97.06
June 16	51.0	50.43	+ 30.86	−1.80	+0.03	+16.22	+ 45.31	95.74
19	49.5	48.94	+ 30.69	−1.82	−0.01	+16.42	+ 45.28	94.22
26	51.7	51.12	+ 30.30	−1.86	−0.13	+16.77	+ 45.08	96.20
July 3	50.3	49.74	+ 29.94	−1.90	−0.24	+16.88	+ 44.68	94.42
5	51.0	50.43	+ 29.83	−1.91	−0.27	+16.87	+ 44.52	94.95
14	52.0	51.42	+ 29.30	−1.97	−0.39	+16.60	+ 43.54	94.96
Sept. 4	65.0	64.28	+ 26.49	−2.26	−0.28	+ 8.50	+ 32.45	96.73
22	69.0	68.23	+ 25.50	−2.37	+0.03	+ 3.56	+ 26.72	94.95
24	71.0	70.21	+ 25.39	−2.38	+0.07	+ 3.00	+ 26.08	96.29
Oct. 1	72.5	71.69	+ 25.02	−2.42	+0.18	+ 0.98	+ 23.76	95.45
2	73.0	72.19	+ 24.91	−2.43	+0.20	+ 0.70	+ 23.38	95.57
22	80.0	79.11	+ 23.87	−2.53	+0.46	− 5.05	+ 16.75	95.86
Nov. 2	82.0	81.09	+ 23.32	−2.60	+0.52	− 8.04	+ 13.18	94.27
Dec. 5	92.0	90.98	+ 21.48	−2.78	+0.26	−14.85	+ 4.11	95.09
18	93.0	91.96	+ 20.76	−2.85	+0.03	−16.30	+ 1.64	93.60
27	95.0	93.94	+ 20.26	−2.90	−0.14	−16.79	+ 0.43	94.37
1729 Jan. 15	96.0	94.93	+ 19.18	−3.01	−0.44	−16.36	− 0.63	94.30
Mar. 20	85.3	84.35	+ 15.69	−3.35	+0.04	− 3.35	+ 9.03	93.38
Apr. 27	78.3	77.43	+ 13.61	−3.55	+0.52	+ 7.36	+ 17.94	95.37
May 22	73.0	72.18	+ 12.24	−3.68	+0.42	+12.89	+ 21.87	94.05
24	72.8	71.99	+ 12.13	−3.69	+0.40	+13.25	+ 22.09	94.08
June 10	72.5	71.69	+ 11.21	−3.77	+0.15	+15.64	+ 23.23	94.92
15	73.5	72.68	+ 10.93	−3.80	+0.07	+16.12	+ 23.32	96.00
17	73.5	72.68	+ 10.82	−3.81	+0.03	+16.27	+ 23.31	95.99
18	73.0	72.19	+ 10.76	−3.82	+0.01	+16.34	+ 23.29	95.48
21	73.3	72.49	+ 10.59	−3.84	−0.06	+16.53	+ 23.22	95.71
July 4	74.5	73.67	+ 9.90	−3.89	−0.26	+16.89	+ 22.64	96.31
11	74.7	73.87	+ 9.51	−3.92	−0.36	+16.74	+ 21.97	95.84
1730 July 2	95.5	94.43	− 9.99	−5.46	−0.22	+16.87	+ 1.20	95.63
1735 Sept. 24	210.0	207.66	−114.61	−2.69	+0.06	+ 3.22	−114.02	93.64
1739 Apr. 30	271.0	267.98	−186.59	+4.94	+0.53	+ 7.93	−173.19	94.79
1740 June 13	286.5	283.30	−209.04	+6.26	+0.10	+15.95	−186.73	96.57
14	287.5	284.29	−209.10	+6.26	+0.08	+16.04	−186.72	97.57
17	287.2	284.00	−209.27	+6.27	+0.03	+16.28	−186.69	97.31
1741 Sept. 9	318.0	314.46	−233.85	+6.68	−0.20	+ 7.16	−220.21	94.25
10	320.2	316.64	−233.91	+6.67	−0.18	+ 6.90	−220.52	96.12
1742 Sept. 17	340.7	336.90	−254.28	+6.15	−0.06	+ 5.08	−243.11	93.79
1746 Oct. 4	436.7	431.83	−335.24	−1.15	+0.23	+ 0.29	−335.87	95.96
1747 Mar. 10	452.7	447.66	−343.86	−2.09	−0.12	− 6.48	−352.55	95.11

TABLE V.—*Reduction of the Wanstead Observations.*

ε URSÆ MAJ.

Assuming $P = 32^\circ\,20' + 143''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 26	95.0	93.94	+44.″84	−2.″60	−0.″06	+ 6.″58	+48.″76	142.″70
Oct. 5	99.8	98.69	+44.35	−2.65	+0.10	+ 3.88	+45.68	144.37
27	105.2	104.03	+43.16	−2.77	+0.43	− 2.99	+37.83	141.86
28	106.8	105.61	+43.11	−2.78	+0.44	− 3.31	+37.46	143.07
31	108.0	106.80	+42.95	−2.80	+0.47	− 4.23	+36.39	143.19
Nov. 2	107.3	106.11	+42.84	−2.81	+0.48	− 4.87	+36.04	142.15
7	109.5	108.28	+42.57	−2.83	+0.52	− 6.40	+33.86	142.14
24	116.8	115.50	+41.65	−2.92	+0.50	−11.21	+28.02	143.52
25	115.0	113.72	+41.60	−2.93	+0.49	−11.39	+27.77	141.49
26	115.0	113.72	+41.54	−2.93	+0.48	−11.61	+27.48	141.20
28	116.7	115.40	+41.43	−2.95	+0.46	−12.14	+26.80	142.20
Dec. 24	122.5	121.13	+40.03	−3.09	+0.07	−16.92	+20.09	141.22
25	124.3	122.92	+39.98	−3.10	+0.05	−17.04	+19.89	142.81
1728 Jan. 9	128.0	126.57	+39.12	−3.19	−0.22	−18.21	+17.50	144.07
18	128.0	126.57	+38.63	−3.23	−0.37	−18.20	+16.83	143.40
Feb. 4	127.0	125.59	+37.71	−3.32	−0.51	−16.99	+16.89	142.48
5	126.5	125.09	+37.66	−3.33	−0.51	−16.85	+16.97	142.06
28	124.8	123.41	+36.42	−3.45	−0.43	−12.74	+19.80	143.21
Apr. 17	110.0	108.77	+33.77	−3.70	+0.35	+ 1.30	+31.72	140.49
27	108.3	107.10	+33.23	−3.75	+0.47	+ 4.35	+34.30	141.40
29	107.8	106.60	+33.12	−3.76	+0.49	+ 4.95	+34.80	141.40
May 16	105.2	104.03	+32.21	−3.85	+0.52	+ 9.72	+38.60	142.63
22	105.0	103.83	+31.88	−3.88	+0.50	+11.21	+37.71	141.54
June 16	101.0	99.88	+30.53	−4.00	+0.20	+16.08	+42.81	142.69
19	101.0	99.88	+30.37	−4.01	+0.15	+16.49	+43.00	142.88
20	100.5	99.38	+30.32	−4.02	+0.13	+16.62	+43.05	142.43
26	100.8	99.68	+29.99	−4.05	+0.03	+17.32	+43.29	142.97
July 3	99.0	97.90	+29.62	−4.08	−0.09	+17.85	+43.30	141.20
5	100.5	99.38	+29.51	−4.09	−0.13	+17.97	+43.26	142.64
6	101.0	99.88	+29.46	−4.09	−0.15	+18.02	+43.24	143.12
16	101.5	100.37	+28.90	−4.14	−0.30	+18.26	+42.72	143.09
17	102.5	101.35	+28.85	−4.14	−0.32	+18.25	+42.64	143.99
Aug. 13	107.0	105.81	+27.39	−4.28	−0.53	+16.28	+38.86	144.67
16	108.0	106.80	+27.23	−4.29	−0.53	+15.84	+38.25	145.05
Sept. 4	110.7	109.46	+26.21	−4.38	−0.40	+12.22	+33.65	143.11
17	115.0	113.72	+25.50	−4.44	−0.22	+ 8.90	+29.74	143.46
22	115.5	114.21	+25.23	−4.46	−0.13	+ 7.52	+28.16	142.37
24	117.0	115.70	+25.12	−4.47	−0.09	+ 6.94	+27.50	143.20
Oct. 20	125.8	124.40	+23.72	−4.59	+0.35	− 1.05	+18.43	142.83
22	126.5	125.09	+23.61	−4.60	+0.38	− 1.68	+17.71	142.80
Nov. 9	132.7	131.21	+22.64	−4.68	+0.52	− 7.21	+11.27	142.48
28	139.0	137.45	+21.52	−4.76	+0.46	−12.32	+ 4.90	142.35
Dec. 4	142.0	140.42	+21.30	−4.78	+0.40	−13.66	+ 3.26	143.68
5	140.5	138.93	+21.25	−4.78	+0.39	−13.87	+ 2.99	141.92
22	145.3	143.69	+20.21	−4.86	+0.11	−16.77	− 0.31	143.38
27	145.0	143.88	+19.94	−4.88	+0.02	−17.35	− 2.27	141.61
1729 Jan. 27	148.0	146.35	+18.32	−5.02	−0.47	−17.95	− 5.12	141.23
31	149.0	147.34	+18.10	−5.04	−0.50	−17.33	− 4.77	142.57
Feb. 1	147.5	145.85	+18.05	−5.04	−0.50	−17.22	− 4.71	141.14
2	148.0	146.35	+17.99	−5.05	−0.51	−17.11	− 4.68	141.67

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1729 Feb. 5	149.5	147.83	+ 17″.83	−5″.06	−0″.52	−16″.76	− 4″.51	143″.32
7	148.5	146.84	+ 17.72	−5.07	−0.53	−16.49	− 4.37	142.47
Apr. 15	134.5	133.00	+ 14.10	−5.33	+0.33	+ 0.62	+ 9.72	142.72
16	135.0	133.50	+ 14.05	−5.33	+0.34	+ 0.93	+ 9.99	143.49
27	131.8	130.33	+ 13.46	−5.37	+0.47	+ 4.30	+ 12.86	143.19
May 22	124.5	123.11	+ 12.11	−5.46	+0.50	+11.16	+ 18.31	141.42
June 10	123.2	121.83	+ 11.08	−5.53	+0.30	+15.10	+ 20.95	142.78
15	123.2	121.83	+ 10.81	−5.55	+0.22	+15.91	+ 21.39	143.22
18	123.7	122.32	+ 10.64	−5.56	+0.18	+16.22	+ 21.48	143.80
29	121.8	120.44	+ 10.05	−5.59	−0.02	+17.53	+ 21.97	142.41
July 4	122.0	120.64	+ 9.78	−5.62	−0.11	+17.90	+ 21.95	142.59
9	123.5	122.12	+ 9.50	−5.63	−0.20	+18.13	+ 21.80	143.92
11	121.5	120.14	+ 9.39	−5.64	−0.23	+18.20	+ 21.72	141.86
15	121.3	119.95	+ 9.17	−5.65	−0.29	+18.26	+ 21.49	141.44
16	122.0	120.64	+ 9.12	−5.66	−0.30	+18.26	+ 21.42	142.06
29	124.0	122.62	+ 8.43	−5.70	−0.46	+17.84	+ 20.11	142.73
Aug. 1	125.0	123.61	+ 8.62	−5.71	−0.48	+17.61	+ 19.68	143.29
Sept. 1	130.0	128.55	+ 6.60	−5.80	−0.43	+12.90	+ 13.27	141.82
Oct. 24	147.0	145.36	+ 3.73	−5.96	+0.40	− 2.23	− 4.06	141.30
25	147.8	146.15	+ 3.68	−5.96	+0.41	− 2.54	− 4.41	141.74
Nov. 4	152.0	150.31	+ 3.13	−5.99	+0.50	− 5.64	− 8.00	142.31
1730 June 28	143.0	141.41	− 9.66	−6.52	−0.01	+17.43	+ 1.24	142.65
Aug. 4	147.0	145.36	− 11.67	−6.57	−0.50	+17.37	− 1.37	143.99
Sept. 3	152.0	150.31	− 13.28	−6.61	−0.41	+12.52	− 7.78	142.53
6	154.5	152.77	− 13.45	−6.61	−0.38	+11.90	− 8.54	144.23
1731 Jan. 8	189.0	186.90	− 20.19	−6.72	−0.22	−18.19	− 45.32	141.58
14	189.0	186.90	− 20.52	−6.72	−0.32	−18.26	− 45.82	141.08
Aug. 15	167.5	165.63	− 32.03	−6.71	−0.53	+16.10	− 23.17	142.46
31	172.0	170.08	− 32.78	−6.70	−0.44	+13.22	− 26.70	143.38
Sept. 21	177.0	175.03	− 34.03	−6.69	−0.15	+ 8.00	− 32.87	142.16
24	177.0	175.03	− 34.19	−6.69	−0.10	+ 7.15	− 33.83	141.20
26	178.5	176.51	− 34.30	−6.69	−0.06	+ 6.75	− 34.30	142.21
Oct. 12	185.0	182.94	− 35.16	−6.67	+0.22	+ 1.71	− 39.90	143.04
1732 Jan. 12	209.0	206.67	− 40.18	−6.56	−0.27	−18.25	− 65.26	141.41
20	208.4	206.08	− 40.62	−6.54	−0.39	−18.17	− 65.72	140.36
22	206.3	204.01	− 40.73	−6.54	−0.41	−18.11	− 65.79	138.22
Sept. 14	196.0	193.82	− 53.48	−5.96	−0.26	+ 9.71	− 49.99	143.83
15	197.0	194.81	− 53.53	−5.96	−0.24	+ 9.45	− 50.28	144.53
17	195.0	192.83	− 53.64	−5.95	−0.21	+ 8.90	− 50.90	141.93
1734 June 22	219.5	217.05	− 88.37	−3.11	+0.10	+16.80	− 74.58	142.47
23	220.5	218.04	− 88.42	−3.10	+0.08	+16.92	− 74.52	143.52
27	220.5	218.04	− 88.64	−3.08	+0.01	+17.33	− 74.38	143.66
July 20	221.0	218.54	− 89.99	−2.95	−0.36	+18.22	− 75.08	143.46
21	220.5	218.04	− 90.04	−2.94	−0.37	+18.19	− 75.16	142.88
28	221.0	218.54	− 90.42	−2.90	−0.45	+17.91	− 75.86	142.68
Aug. 11	222.0	219.53	− 91.18	−2.82	−0.52	+16.60	− 77.92	141.61
1736 Sept. 21	268.0	265.02	−132.97	+1.99	−0.15	+ 7.80	−123.33	141.69
23	267.8	264.82	−133.08	+2.00	−0.11	+ 7.23	−123.96	140.86
1737 Sept. 17	285.3	282.13	−152.53	+4.05	−0.22	+ 8.97	−139.73	142.40
1739 Apr. 30	317.0	313.47	−184.49	+6.31	+0.49	+ 5.01	−172.68	140.79
May 7	315.2	311.69	−184.87	+6.33	+0.52	+ 7.07	−170.95	140.74
1740 June 10	332.2	328.50	−206.52	+6.79	+0.30	+15.14	−184.29	144.21

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1740 June 12	332.7	328.99	−206.″63	+6.″79	+0.″26	+15.″46	−184.″12	144.″87
14	332.7	328.99	−206.74	+6.79	+0.23	+15.77	−183.95	145.04
15	331.0	327.31	−206.79	+6.79	+0.22	+15.92	−183.86	143.45
17	331.7	328.00	−206.90	+6.79	+0.18	+16.20	−183.73	144.27
21	331.0	327.31	−207.12	+6.79	+0.12	+16.74	−183.47	143.84
1741 Sept. 11	363.0	358.96	−231.31	+6.19	−0.52	+10.55	−215.09	143.87
12	361.9	357.87	−231.36	+6.19	−0.29	+10.30	−215.16	142.71
14	362.3	358.27	−231.47	+6.18	−0.26	+ 9.79	−215.76	142.51
Oct. 2	368.7	364.59	−232.44	+6.14	+0.05	+ 4.64	−221.61	142.98
4	370.2	366.08	−232.55	+6.14	+0.09	+ 4.04	−222.28	143.80
1742 Sept. 17	382.2	377.95	−251.40	+4.89	−0.22	+ 9.03	−237.70	140.25
1745 Sept. 16	449.9	444.89	−310.67	−1.27	−0.23	+ 9.27	−302.90	141.99
1746 Sept. 30	475.9	470.60	−331.19	−3.42	+0.01	+ 5.34	−329.26	141.34
Oct. 4	477.2	471.89	−331.41	−3.44	+0.09	+ 4.17	−330.59	141.30
1747 Mar. 10	499.2	493.64	−339.92	−4.24	−0.28	−10.24	−334.68	138.96
Sept. 14	497.0	491.46	−350.08	−5.06	−0.26	+ 9.93	−345.47	145.99

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Assuming $P = 33° 35' + 166''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Oct. 5	117.1	115.80	+42.″77	−3.″76	+0.″03	+ 6.″12	+45.″16	160.″96
24	122.0	120.64	+41.79	−3.86	+0.34	+ 0.15	+38.42	159.06
27	123.5	122.12	+41.63	−3.88	+0.39	− 0.80	+37.34	159.46
28	124.4	123.02	+41.58	−3.89	+0.40	− 1.15	+36.94	159.96
31	124.3	122.92	+41.42	−3.91	+0.43	− 2.11	+35.83	158.75
Nov. 6	127.3	125.89	+41.12	−3.92	+0.49	− 4.00	+33.69	159.58
7	127.1	125.69	+41.07	−3.93	+0.50	− 4.35	+33.29	158.98
24	133.3	131.82	+40.18	−4.01	+0.52	− 9.43	+27.26	159.08
25	134.0	132.51	+40.13	−4.02	+0.52	− 9.71	+26.92	159.43
26	134.5	133.00	+40.08	−4.02	+0.52	− 9.97	+26.61	159.61
28	134.7	133.20	+39.98	−4.03	+0.51	−10.55	+25.91	159.11
Dec. 16	142.0	140.42	+39.04	−4.12	+0.29	−14.78	+20.43	160.85
24	141.0	139.43	+38.61	−4.17	+0.15	−16.21	+18.38	157.81
25	142.5	140.91	+38.56	−4.18	+0.13	−16.37	+18.14	159.05
1728 Jan. 9	147.4	145.76	+37.72	−4.25	−0.15	−18.15	+15.17	160.93
Feb. 4	147.2	145.56	+36.37	−4.37	−0.50	−17.92	+13.58	159.14
5	147.8	146.15	+36.32	−4.38	−0.50	−17.84	+13.60	159.75
28	145.7	144.08	+35.11	−4.49	−0.47	−14.44	+15.71	159.78
Apr. 1	136.5	134.98	+33.40	−4.50	+0.03	− 5.87	+23.06	158.04
17	132.7	131.22	+32.58	−4.72	+0.30	− 0.93	+27.23	158.45
26	130.5	129.04	+32.10	−4.76	+0.42	+ 1.90	+29.66	158.70
27	131.0	129.54	+32.05	−4.76	+0.43	+ 2.21	+29.93	159.47
29	131.7	130.23	+31.94	−4.77	+0.45	+ 2.83	+30.45	160.68
May 16	126.0	124.60	+31.06	−4.85	+0.53	+ 7.87	+34.61	159.21
22	126.7	125.29	+30.75	−4.87	+0.52	+ 9.52	+35.92	161.21
June 16	121.2	119.85	+29.44	−4.98	+0.27	+15.22	+39.95	159.80

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 June 19	120.0	118.66	+29″.28	−4″.99	+0″.23	+15″.65	+40″.17	158″.83
26	120.0	118.66	+28.92	−5.02	+0.11	+16.69	+40.70	159.36
July 3	119.2	117.87	+28.55	−5.06	+0.03	+17.51	+41.03	158.90
4	120.0	118.66	+28.50	−5.06	+0.01	+17.61	+41.06	159.72
9	120.5	119.15	+28.24	−5.09	−0.12	+18.03	+41.06	160.21
13	120.5	119.15	+28.03	−5.10	−0.19	+18.27	+41.01	160.16
14	121.0	119.65	+27.98	−5.10	−0.21	+18.32	+40.99	160.64
Aug. 13	125.0	123.61	+26.42	−5.23	−0.52	+17.41	+38.08	161.69
16	125.0	123.61	+26.26	−5.24	−0.53	+17.07	+37.56	161.17
23	127.0	125.59	+25.90	−5.27	−0.52	+16.11	+36.22	161.81
Sept. 4	128.3	126.87	+25.28	−5.31	−0.45	+13.95	+33.47	160.34
14	131.2	129.74	+24.76	−5.35	−0.33	+11.69	+30.77	160.51
Oct. 2	137.0	135.47	+23.81	−5.42	−0.03	+ 6.78	+25.14	160.61
9	138.5	136.95	+23.45	−5.46	+0.10	+ 4.66	+22.69	159.64
20	143.5	141.90	+22.87	−5.50	+0.28	+ 1.19	+18.84	160.74
22	144.0	142.40	+22.77	−5.51	+0.31	+ 0.55	+18.12	160.52
Nov. 9	151.3	149.62	+21.83	−5.57	+0.51	− 5.20	+11.57	161.19
Dec. 5	158.0	156.24	+20.48	−5.66	+0.44	−12.51	+ 2.75	158.99
22	163.0	161.18	+19.59	−5.72	+0.19	−16.01	− 1.95	159.23
1729 Jan. 27	168.0	166.13	+17.67	−5.85	−0.44	−18.38	− 7.00	159.13
31	168.8	166.92	+17.46	−5.86	−0.48	−18.16	− 7.04	159.88
Feb. 2	168.0	166.13	+17.36	−5.87	−0.49	−18.02	− 7.02	159.11
5	168.5	166.62	+17.20	−5.88	−0.51	−17.77	− 6.96	159.66
7	168.0	166.13	+17.10	−5.89	−0.52	−17.58	− 6.89	159.24
Apr. 15	156.0	154.26	+13.60	−6.10	+0.27	− 1.63	+ 6.14	160.40
16	154.5	152.77	+13.55	−6.10	+0.29	− 1.32	+ 6.42	159.19
19	155.0	153.27	+13.39	−6.11	+0.33	− 0.38	+ 7.23	160.50
23	154.2	152.48	+13.18	−6.12	+0.38	+ 0.89	+ 8.33	160.81
24	152.5	150.80	+13.13	−6.12	+0.39	+ 1.20	+ 8.60	159.40
May 22	145.9	144.28	+11.68	−6.20	+0.52	+ 9.47	+15.47	159.75
28	143.8	142.20	+11.37	−6.22	+0.49	+10.99	+16.63	158.83
June 10	142.0	140.42	+10.60	−6.25	+0.36	+14.00	+18.71	159.13
15	142.5	140.91	+10.34	−6.26	+0.29	+14.90	+19.27	160.18
18	141.5	139.92	+10.18	−6.27	+0.24	+15.43	+19.58	159.50
July 4	140.0	138.44	+ 9.43	−6.31	−0.03	+17.58	+20.67	159.11
5	140.3	138.74	+ 9.38	−6.31	−0.05	+17.69	+20.71	159.45
6	142.0	140.42	+ 9.33	−6.32	−0.07	+17.77	+20.71	161.13
10	140.3	138.74	+ 9.12	−6.33	−0.14	+18.08	+20.73	159.47
11	140.7	139.13	+ 9.07	−6.33	−0.15	+18.15	+20.74	159.87
15	140.0	138.44	+ 8.86	−6.34	−0.22	+18.35	+20.65	159.09
16	140.0	138.44	+ 8.81	−6.34	−0.24	+18.39	+20.62	159.06
29	141.5	139.92	+ 8.13	−6.38	−0.42	+18.44	+19.77	159.69
Aug. 1	142.0	140.42	+ 7.97	−6.39	−0.45	+18.56	+19.69	160.11
Oct. 24	163.0	161.18	+ 3.60	−6.56	+0.34	0.00	− 2.62	158.56
1730 July 28	163.0	161.18	−10.88	−6.89	−0.41	+18.45	+ 0.27	161.45
Aug. 4	163.5	161.67	−11.30	−6.89	−0.47	+18.19	− 0.47	161.20
16	165.0	163.16	−11.87	−6.89	−0.53	+17.13	− 2.16	161.00
Sept. 3	167.5	165.63	−12.81	−6.89	−0.46	+14.25	− 5.91	159.72
6	167.0	165.14	−12.97	−6.89	−0.43	+13.64	− 6.65	158.49
29	174.0	172.06	−14.17	−6.90	−0.08	+ 7.80	−13.35	158.71
1731 Jan. 9	205.5	203.21	−19.53	−6.87	−0.17	−18.16	−44.73	158.48
14	205.7	203.41	−19.79	−6.86	−0.25	−18.42	−45.32	158.09

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1731 Aug. 15	181.8	179.77	− 30.″88	−6.″62	−0.″53	+17.″49	− 20.″54	159.″23
Sept. 21	193.2	191.05	− 32.82	−6.57	−0.22	+10.11	− 29.50	161.55
24	193.5	191.34	− 32.98	−6.57	−0.17	+ 9.34	− 30.38	160.96
26	192.5	190.35	− 33.08	−6.56	−0.14	+ 8.74	− 31.04	159.31
29	193.7	191.54	− 33.24	−6.56	−0.08	+ 7.87	− 32.01	159.53
Oct. 1	194.3	192.14	− 33.34	−6.56	−0.05	+ 7.30	− 32.65	159.49
12	199.5	197.27	− 33.91	−6.54	+0.15	+ 3.96	− 36.34	160.93
1732 Jan. 12	224.2	221.71	− 38.75	−6.33	−0.21	−18.32	− 63.61	158.10
20	225.0	222.49	− 39.17	−6.30	−0.34	−18.53	− 64.34	158.15
22	223.7	221.21	− 39.27	−6.29	−0.36	−18.53	− 64.45	156.76
Sept. 14	208.0	205.68	− 51.57	−5.45	−0.33	+11.69	− 45.66	160.02
1734 June 22	234.5	231.88	− 85.32	−2.07	+0.18	+16.04	− 71.17	160.71
23	235.0	232.38	− 85.37	−2.06	+0.16	+16.19	− 71.08	161.30
29	233.5	230.89	− 85.68	−2.02	+0.06	+17.00	− 70.64	160.25
July 20	233.0	230.40	− 86.79	−1.90	−0.29	+18.47	− 70.51	159.89
21	232.5	229.91	− 86.83	−1.89	−0.31	+18.51	− 70.52	159.39
22	233.0	230.40	− 86.88	−1.88	−0.32	+18.52	− 70.56	159.84
Aug. 14	235.8	233.17	− 88.08	−1.74	−0.52	+17.35	− 72.99	160.18
18	236.3	233.67	− 88.29	−1.71	−0.54	+16.88	− 73.66	160.01
1735 Sept. 24	263.0	260.07	−109.28	+0.90	−0.17	+ 9.28	− 99.27	160.80
1736 Sept. 19	277.5	274.40	−128.14	+3.10	−0.25	+10.41	−114.88	159.52
23	277.5	274.40	−128.35	+3.12	−0.19	+ 9.35	−116.07	158.33
1737 July 3	284.0	280.84	−143.23	+4.70	−0.02	+17.48	−121.07	159.77
17	284.0	280.84	−144.06	+4.77	−0.25	+18.41	−121.13	159.71
Sept. 17	295.8	292.50	−147.19	+5.11	−0.29	+10.99	−131.38	161.12
1738 June 29	299.5	296.16	−161.98	+6.15	+0.06	+17.00	−138.77	157.39
July 8	298.5	295.17	−162.44	+6.18	−0.10	+17.90	−138.46	156.71
10	303.0	299.63	−162.54	+6.19	−0.14	+18.05	−138.44	161.19
13	301.0	297.65	−162.70	+6.20	−0.19	+18.23	−138.46	159.19
1739 Apr. 30	330.5	326.81	−177.90	+6.83	+0.46	+ 2.89	−167.72	159.09
May 6	328.0	324.35	−178.27	+6.84	+0.50	+ 4.73	−166.20	158.15
7	327.2	323.56	−178.32	+6.84	+0.51	+ 5.03	−165.94	157.62
1740 June 10	41.0	40.54	−199.12	+6.88	+0.36	+13.99	−177.89	162.65
11	40.7	40.23	−199.17	+6.88	+0.35	+14.18	−177.76	162.47
12	40.8	40.34	−199.22	+6.88	+0.33	+14.38	−177.63	162.71
13	41.0	40.54	−199.28	+6.88	+0.32	+14.57	−177.51	163.03
14	40.0	39.55	−199.33	+6.88	+0.30	+14.76	−177.39	162.16
15	39.8	39.36	−199.38	+6.87	+0.29	+14.94	−177.28	162.08
21	39.5	39.06	−199.69	+6.86	+0.19	+15.96	−176.68	162.38
1741 Sept. 14	68.0	67.24	−223.21	+5.77	−0.33	+11.74	−206.03	161.21
15	69.0	68.23	−223.26	+5.77	−0.34	+11.50	−206.33	161.90
Oct. 2	75.5	74.65	−224.15	+5.71	−0.03	+ 6.86	−211.61	163.04
4	75.5	74.65	−224.25	+5.70	+0.01	+ 6.57	−211.97	162.68
1742 Sept. 17	91.0	89.99	−242.42	+4.13	−0.29	+11.06	−227.52	162.47
1746 Sept. 30	177.0	175.03	−319.35	−4.37	−0.07	+ 7.70	−316.09	158.94
Oct. 1	181.5	179.47	−319.40	−4.38	−0.05	+ 7.41	−316.42	163.05
1747 Sept. 13	194.0	191.84	−337.51	−5.88	−0.34	+12.10	−331.63	160.21

TABLE V.—*Reduction of the Wanstead Observations.*

η URSÆ MAJ.

Assuming $P = 39° 15' + 189''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 16	141.3	139.73	+42.″04	−4.″47	−0.″35	+12.″86	+50.″08	189.″81
25	142.0	140.42	+41.59	−4.52	−0.21	+10.72	+47.58	188.00
Oct. 5	147.4	145.76	+41.09	−4.57	−0.03	+ 8.09	+44.58	190.34
6	146.0	144.37	+41.04	−4.57	−0.01	+ 7.82	+44.28	188.65
24	152.0	150.31	+40.14	−4.66	+0.30	+ 2.46	+38.24	188.55
27	153.7	151.99	+39.99	−4.68	+0.35	+ 1.54	+37.20	189.19
28	155.0	153.27	+39.94	−4.68	+0.36	+ 1.20	+36.82	190.09
Nov. 6	156.7	154.95	+39.48	−4.72	+0.47	− 1.60	+33.63	188.58
7	158.0	156.24	+39.43	−4.72	+0.48	− 1.94	+33.25	188.49
24	162.5	160.69	+38.50	−4.81	+0.53	− 7.12	+27.10	187.79
25	163.5	161.67	+38.45	−4.81	+0.53	− 7.41	+26.76	188.43
26	163.7	161.87	+38.40	−4.82	+0.53	− 7.69	+26.42	188.29
28	164.3	162.47	+38.30	−4.83	+0.52	− 8.27	+25.72	188.19
Dec. 24	173.0	171.07	+37.08	−4.94	+0.21	−14.52	+17.83	188.90
25	172.5	170.57	+37.03	−4.95	+0.19	−14.71	+17.56	188.13
1728 Jan. 9	177.2	175.23	+36.23	−5.02	−0.10	−17.07	+14.04	189.27
Feb. 4	178.3	176.32	+34.93	−5.13	−0.48	−17.89	+11.43	187.75
5	180.0	178.00	+34.88	−5.14	−0.48	−17.84	+11.42	189.42
28	178.3	176.32	+33.73	−5.24	−0.50	−15.39	+12.60	188.92
Apr. 1	170.5	168.60	+32.08	−5.25	−0.03	− 7.86	+18.94	187.54
21	165.5	163.65	+31.08	−5.46	+0.31	− 1.99	+23.94	187.59
26	164.0	162.17	+30.83	−5.48	+0.38	− 0.48	+25.25	187.42
27	164.8	162.90	+30.78	−5.48	+0.39	− 0.17	+25.52	188.48
29	163.7	161.87	+30.68	−5.49	+0.42	+ 0.43	+26.04	187.91
May 16	159.7	157.92	+29.82	−5.58	+0.53	+ 5.52	+30.29	188.21
June 16	153.8	152.09	+28.27	−5.68	+0.32	+13.26	+36.17	188.26
19	153.5	151.79	+28.12	−5.69	+0.28	+13.86	+36.57	188.36
26	153.5	151.79	+27.77	−5.72	+0.17	+15.10	+37.32	189.11
July 2	153.0	151.30	+27.47	−5.74	+0.06	+16.01	+37.80	189.10
3	152.4	150.71	+27.42	−5.74	+0.04	+16.14	+37.86	188.57
5	151.5	149.81	+27.32	−5.75	+0.01	+16.40	+37.98	187.79
6	152.0	150.31	+27.27	−5.76	−0.01	+16.52	+38.02	188.33
9	151.5	149.81	+27.12	−5.77	−0.06	+16.86	+38.15	187.96
10	152.0	150.31	+27.07	−5.77	−0.08	+16.97	+38.19	188.50
13	151.8	150.11	+26.92	−5.78	−0.13	+17.25	+38.26	188.37
28	152.5	150.80	+26.17	−5.83	−0.37	+18.01	+37.98	188.78
Aug. 13	154.0	152.28	+25.37	−5.90	−0.51	+17.60	+36.56	188.84
16	155.0	153.27	+25.22	−5.91	−0.53	+17.38	+36.16	189.43
23	156.0	154.26	+24.87	−5.93	−0.53	+16.69	+35.10	189.36
Sept. 4	158.3	156.54	+24.27	−5.97	−0.48	+14.99	+32.81	189.35
19	162.2	160.40	+23.52	−6.02	−0.31	+11.97	+29.16	189.56
Oct. 1	165.5	163.65	+22.92	−6.06	−0.11	+ 8.99	+25.74	189.39
2	166.0	164.15	+22.87	−6.06	−0.09	+ 8.71	+25.43	189.58
9	167.7	165.83	+22.52	−6.09	+0.04	+ 6.74	+23.21	189.04
20	172.5	170.57	+21.97	−6.13	+0.24	+ 3.46	+19.54	190.11
22	172.5	170.57	+21.87	−6.14	+0.27	+ 2.85	+18.85	189.42
Nov. 9	178.5	176.51	+20.97	−6.19	+0.49	− 2.80	+12.47	188.98
28	184.7	182.64	+20.02	−6.24	+0.52	− 8.49	+ 5.81	188.45
30	185.5	183.43	+19.92	−6.25	+0.51	− 9.04	+ 5.14	188.57
Dec. 5	186.5	184.42	+19.67	−6.26	+0.47	−10.47	+ 3.41	187.83

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 Dec. 22	193.0	190.85	+18.″81	−6.″31	+0.″24	−14.″29	− 1.″55	189.″30
27	192.6	190.45	+18.56	−6.32	+0.15	−15.21	− 2.82	187.63
1729 Jan. 31	199.5	197.27	+16.77	−6.43	−0.45	−17.99	− 8.10	189.17
Feb. 1	198.7	196.48	+16.72	−6.43	−0.46	−17.96	− 8.13	188.35
2	199.0	196.78	+16.67	−6.43	−0.47	−17.93	− 8.16	188.62
5	199.7	197.47	+16.52	−6.44	−0.49	−17.81	− 8.22	189.25
7	199.0	196.78	+16.42	−6.44	−0.51	−17.70	− 8.23	188.55
Apr. 16	187.0	184.92	+13.02	−6.62	+0.23	− 3.59	+ 3.04	187.96
23	184.8	182.74	+12.67	−6.63	+0.34	− 1.46	+ 4.92	187.66
24	185.2	183.14	+12.62	−6.64	+0.35	− 1.16	+ 5.17	188.31
27	183.5	181.45	+12.47	−6.64	+0.39	− 0.25	+ 5.97	187.42
May 22	178.8	176.81	+11.21	−6.69	+0.53	+ 7.13	+12.18	188.99
June 10	173.5	171.56	+10.26	−6.73	+0.40	+11.93	+15.86	187.42
11	173.5	171.56	+10.21	−6.73	+0.39	+12.15	+16.02	187.58
15	173.4	171.46	+10.01	−6.74	+0.33	+13.00	+16.60	188.06
17	173.8	171.86	+ 9.91	−6.74	+0.31	+13.41	+16.89	188.75
18	173.3	171.37	+ 9.86	−6.75	+0.29	+13.60	+17.00	188.37,
July 4	171.5	169.59	+ 9.06	−6.78	+0.03	+16.24	+18.55	188.14
6	172.5	170.57	+ 8.96	−6.78	−0.01	+16.39	+18.56	189.13
10	170.5	168.60	+ 8.76	−6.79	−0.08	+16.94	+18.83	187.43
11	171.7	169.79	+ 8.71	−6.79	−0.10	+17.04	+18.86	188.65
16	172.0	170.08	+ 8.46	−6.80	−0.18	+17.47	+18.95	189.03
Aug. 1	172.3	170.38	+ 7.66	−6.81	−0.41	+18.03	+18.47	188.85
Sept. 21	181.0	178.98	+ 5.11	−6.90	−0.27	+11.57	+ 9.51	188.49
Oct. 3	185.3	183.24	+ 4.51	−6.92	−0.07	+ 8.51	+ 6.03	189.27
18	190.2	188.08	+ 3.76	−6.94	+0.20	+ 4.14	+ 1.16	189.24
24	191.3	189.17	+ 3.46	−6.95	+0.30	+ 2.31	− 0.88	188.29
25	192.5	190.35	+ 3.41	−6.95	+0.31	+ 2.00	− 1.23	189.12
Nov. 4	195.5	193.32	+ 2.90	−6.96	+0.44	− 1.13	− 4.75	188.57
1730 July 28	191.7	189.56	−10.45	−7.03	−0.37	+17.99	+ 0.14	189.70
30	191.7	189.56	−10.55	−7.03	−0.39	+18.03	+ 0.06	189.62
Aug. 4	191.0	188.87	−10.85	−7.05	−0.44	+18.00	− 0.34	188.53
16	193.2	191.05	−11.40	−7.04	−0.53	+17.42	− 1.55	189.50
23	195.0	192.83	−11.75	−7.04	−0.53	+16.78	− 2.54	190.29
Sept. 6	197.2	195.01	−12.45	−7.03	−0.47	+14.83	− 5.12	189.89
29	201.5	199.25	−13.60	−7.01	−0.14	+ 9.45	−11.30	187.95
1731 Jan. 8	235.0	232.38	−18.71	−6.90	−0.10	−16.99	−42.70	189.68
14	236.7	234.06	−19.01	−6.89	−0.20	−17.59	−43.69	190.37
Aug. 15	210.2	207.86	−29.67	−6.47	−0.52	+17.51	−19.15	188.71
18	210.5	208.15	−29.82	−6.46	−0.54	+17.28	−19.54	188.61
28	211.8	209.44	−30.32	−6.44	−0.53	+16.16	−21.12	188.32
31	212.5	210.13	−30.47	−6.43	−0.51	+15.74	−21.67	188.46
Sept. 21	218.5	216.06	−31.52	−6.39	−0.27	+11.68	−26.50	189.56
22	218.3	215.87	−31.57	−6.39	−0.25	+11.45	−26.76	189.11
24	219.7	217.25	−31.67	−6.38	−0.22	+10.97	−27.30	189.95
29	220.5	218.04	−31.92	−6.37	−0.14	+ 9.70	−28.73	189.31
Oct. 12	224.5	222.00	−32.57	−6.35	+0.10	+ 6.09	−32.73	189.27
15	225.0	222.49	−32.72	−6.34	+0.15	+ 5.18	−33.73	188.76
1732 Jan. 12	251.0	248.20	−37.22	−6.07	−0.15	−17.33	−60.77	187.43
20	253.5	250.67	−37.62	−6.04	−0.29	−17.86	−61.81	188.86
22	253.5	250.67	−37.72	−6.03	−0.32	−17.94	−62.01	188.66
Apr. 24	241.5	238.81	−42.37	−5.63	+0.35	− 1.09	−48.74	190.07

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1732 Apr. 28	240.0	237.33	− 42″.57	−5″.61	+0″.41	+ 0″.13	− 47″.64	189″.69
1734 June 22	259.5	256.61	− 81.95	−1.24	+0.23	+14.34	− 68.62	187.99
23	260.5	257.59	− 82.00	−1.23	+0.21	+14.53	− 68.49	189.10
27	260.0	257.10	− 82.20	−1.21	+0.15	+15.29	− 67.97	189.13
29	259.0	256.12	− 82.30	−1.20	+0.11	+15.66	− 67.73	189.39
July 20	258.5	255.62	− 83.35	−1.06	−0.25	+17.72	− 66.94	188.68
21	258.5	255.62	− 83.40	−1.05	−0.27	+17.77	− 66.95	188.67
22	258.5	255.62	− 83.45	−1.05	−0.28	+17.82	− 66.96	188.66
27	258.0	255.13	− 83.70	−1.01	−0.35	+17.99	− 67.07	188.06
28	257.0	254.14	− 83.75	−1.00	−0.36	+18.00	− 67.11	187.03
Aug. 14	261.5	258.58	− 84.60	−0.89	−0.52	+17.56	− 68.45	190.13
18	260.3	257.40	− 84.80	−0.86	−0.54	+17.24	− 68.90	188.50
1735 Sept. 20	284.0	280.84	−104.75	+1.78	−0.29	+11.92	− 91.34	189.50
21	283.7	280.54	−104.80	+1.79	−0.27	+11.69	− 91.59	188.95
1736 Sept. 19	298.0	294.68	−123.05	+4.01	−0.31	+11.98	−107.37	187.31
23	299.0	295.67	−123.25	+4.03	−0.24	+11.04	−108.42	187.35
1737 July 3	305.8	302.39	−137.46	+5.46	+0.04	+16.10	−115.86	186.53
12	307.0	303.58	−137.91	+5.50	−0.12	+17.12	−115.41	188.17
14	306.5	303.08	−138.01	+5.51	−0.15	+17.31	−115.34	187.74
17	306.3	302.89	−138.16	+5.52	−0.20	+17.52	−115.32	187.57
Sept. 17	315.5	311.98	−141.26	+5.77	−0.34	+12.48	−123.35	188.63
1738 June 29	324.5	320.80	−155.56	+6.69	+0.11	+15.48	−133.28	187.52
July 8	321.2	317.62	−156.01	+6.72	−0.05	+16.68	−132.66	184.96
10	322.5	318.90	−156.11	+6.73	−0.08	+16.91	−132.55	186.35
13	322.0	318.41	−156.26	+6.73	−0.13	+17.19	−132.47	185.94
26	322.2	318.61	−156.91	+6.76	−0.34	+17.96	−132.53	186.08
Oct. 4	337.0	333.25	−160.46	+6.90	−0.05	+ 8.45	−145.16	188.09
1739 Apr. 30	354.5	350.55	−170.85	+7.14	+0.43	+ 0.49	−162.79	187.76
May 6	351.5	347.58	−171.16	+7.15	+0.48	+ 2.31	−161.22	186.36
7	350.9	346.99	−171.21	+7.15	+0.49	+ 2.61	−160.96	186.03
Sept. 14	351.4	347.49	−177.71	+7.16	−0.38	+13.42	−157.51	189.98
1740 June 10	364.8	360.74	−191.25	+6.85	+0.40	+11.98	−172.02	188.72
11	365.0	360.93	−191.30	+6.85	+0.39	+12.20	−171.86	189.07
12	365.0	360.93	−191.35	+6.85	+0.38	+12.41	−171.71	189.22
13	365.8	361.72	−191.40	+6.84	+0.36	+12.63	−171.57	190.15
14	364.0	359.95	−191.45	+6.84	+0.35	+12.84	−171.42	188.53
15	364.0	359.95	−191.50	+6.84	+0.33	+13.04	−171.29	188.66
17	365.0	360.93	−191.60	+6.84	+0.31	+13.45	−171.00	189.93
21	362.4	358.37	−191.80	+6.83	+0.25	+14.23	−170.49	187.88
1741 Sept. 15	389.0	384.67	−214.41	+5.37	−0.36	+13.20	−196.20	188.47
Oct. 2	395.0	390.60	−215.26	+5.31	−0.09	+ 8.84	−201.20	189.40
4	395.2	390.80	−215.36	+5.30	−0.05	+ 8.39	−201.72	189.08
1745 Sept. 16	471.8	466.54	−287.68	−3.31	−0.35	+13.06	−278.28	188.26
1746 Sept. 30	497.6	492.05	−306.66	−5.22	−0.12	+ 9.39	−302.61	189.44
Oct. 1	496.8	491.27	−306.71	−5.22	−0.11	+ 9.13	−302.89	188.38
1747 Sept. 13	513.8	508.08	−324.11	−6.45	−0.39	+13.46	−317.49	190.59
14	512.3	506.60	−324.16	−6.45	−0.38	+13.25	−317.74	188.86

TABLE V.—*Reduction of the Wanstead Observations.*

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Assuming $P = 37° 30' - 147''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Aug. 31	165.5	163.65	+7.″29	−8.″83	−0.″45	+18.″86	+16.″87	146.″78
Sept. 1	166.9	165.04	+7.28	−8.83	−0.47	+18.95	+16.93	148.11
2	165.8	163.95	+7.27	−8.83	−0.48	+19.03	+16.99	146.96
3	167.0	165.14	+7.26	−8.83	−0.49	+19.11	+17.05	148.09
5	167.8	165.93	+7.24	−8.83	−0.51	+19.25	+17.15	148.78
13	166.2	164.35	+7.17	−8.83	−0.56	+19.58	+17.36	146.99
14	166.8	164.94	+7.16	−8.83	−0.56	+19.60	+17.37	147.57
15	165.8	163.95	+7.15	−8.83	−0.56	+19.61	+17.37	146.58
18	166.0	164.15	+7.12	−8.83	−0.57	+19.61	+17.33	146.82
26	166.8	164.94	+7.06	−8.83	−0.56	+19.35	+17.02	147.92
Oct. 4	165.2	163.36	+6.99	−8.82	−0.50	+18.74	+16.41	146.95
5	164.7	162.86	+6.98	−8.82	−0.49	+18.63	+16.30	146.56
28	162.5	160.69	+6.79	−8.82	−0.14	+14.80	+12.63	148.06
Nov. 25	154.6	152.87	+6.55	−8.79	+0.39	+ 7.00	+ 5.15	147.72
28	153.8	152.09	+6.52	−8.79	+0.43	+ 6.01	+ 4.17	147.92
Dec. 16	147.2	145.56	+6.37	−8.78	+0.58	− 0.13	− 1.96	147.52
17	146.5	144.86	+6.36	−8.78	+0.58	− 0.50	− 2.34	147.20
24	143.2	141.61	+6.30	−8.77	+0.56	− 2.90	− 4.81	146.42
1728 Jan. 8	138.7	137.15	+6.15	−8.76	+0.42	− 8.30	−10.49	147.64
9	138.2	136.66	+6.14	−8.76	+0.41	− 8.62	−10.83	147.49
27	131.8	130.33	+6.10	−8.73	+0.09	−13.65	−16.09	146.42
Feb. 3	131.0	129.54	+5.94	−8.72	−0.05	−15.29	−18.12	147.66
5	131.0	129.54	+5.92	−8.72	−0.09	−15.71	−18.60	148.14
21	127.5	126.08	+5.79	−8.70	−0.39	−18.36	−21.66	147.74
27	125.0	123.61	+5.74	−8.69	−0.47	−18.99	−22.41	146.02
Mar. 18	126.0	124.60	+5.56	−8.66	−0.57	−19.55	−23.22	147.82
29	126.7	125.29	+5.47	−8.65	−0.52	−18.87	−22.57	147.86
31	127.4	125.99	+5.45	−8.64	−0.51	−18.67	−22.37	148.36
Apr. 2	128.0	126.57	+5.44	−8.64	−0.48	−18.45	−22.13	148.70
4	128.5	127.06	+5.42	−8.64	−0.46	−18.21	−21.89	148.95
17	131.3	129.84	+5.31	−8.61	−0.27	−16.16	−19.73	149.57
18	129.7	128.25	+5.30	−8.61	−0.25	−15.97	−19.53	147.78
May 16	137.7	136.16	+5.06	−8.55	+0.27	− 9.02	−12.24	148.40
17	138.3	136.76	+5.05	−8.55	+0.29	− 8.73	−11.94	148.70
21	136.5	134.98	+5.01	−8.54	+0.49	− 7.53	−10.57	145.55
June 15	147.7	146.05	+4.81	−8.49	+0.57	+ 0.44	− 2.67	148.72
July 2	153.0	151.30	+4.67	−8.46	+0.51	+ 5.98	+ 2.70	148.60
3	154.8	153.07	+4.66	−8.46	+0.50	+ 6.19	+ 2.89	150.18
6	154.0	152.28	+4.63	−8.45	+0.47	+ 7.10	+ 3.75	148.53
13	155.0	153.27	+4.57	−8.43	+0.38	+ 9.18	+ 5.70	147.57
14	157.3	155.55	+4.56	−8.43	+0.36	+ 9.46	+ 5.95	149.60
15	156.0	154.26	+4.55	−8.43	+0.35	+ 9.74	+ 6.21	148.05
16	156.5	154.75	+4.54	−8.43	+0.33	+10.02	+ 6.46	148.29
24	158.0	156.24	+4.47	−8.41	+0.20	+12.17	+ 8.43	147.81
29	159.5	157.72	+4.42	−8.39	+0.11	+13.42	+ 9.56	148.16
Aug. 6	161.0	159.21	+4.36	−8.37	−0.05	+15.19	+11.13	148.08
8	160.5	158.71	+4.34	−8.37	−0.08	+15.61	+11.50	147.21
12	161.7	159.90	+4.32	−8.36	−0.16	+16.36	+12.16	147.74
13	161.0	159.21	+4.30	−8.36	−0.18	+16.54	+12.30	146.91
16	163.0	161.18	+4.28	−8.34	−0.23	+17.05	+12.76	148.42

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 Aug. 21	162.0	160.20	+4″.24	−8″.33	−0″.31	+17″.83	+13″.43	146″.77
23	163.0	161.18	+4.22	−8.32	−0.35	+18.01	+13.56	147.62
26	164.0	162.17	+4.19	−8.32	−0.39	+18.43	+13.91	148.26
29	163.5	161.67	+4.16	−8.31	−0.43	+18.75	+14.17	147.50
Sept. 1	165.5	163.65	+4.15	−8.30	−0.46	+19.02	+14.41	149.24
3	164.0	162.17	+4.13	−8.29	−0.49	+19.17	+14.52	147.65
5	164.0	162.17	+4.11	−8.29	−0.51	+19.30	+14.61	147.56
9	166.0	164.15	+4.08	−8.28	−0.54	+19.50	+14.76	149.39
14	165.0	163.16	+4.03	−8.26	−0.56	+19.61	+14.82	148.34
17	165.0	163.16	+4.00	−8.25	−0.57	+19.61	+14.79	148.37
20	164.3	162.47	+3.98	−8.25	−0.57	+19.56	+14.72	147.75
21	164.3	162.47	+3.97	−8.24	−0.57	+19.54	+14.70	147.77
22	164.7	162.86	+3.96	−8.24	−0.57	+19.50	+14.65	148.21
26	165.0	163.16	+3.93	−8.23	−0.56	+19.31	+14.45	148.71
27	163.3	161.48	+3.92	−8.23	−0.56	+19.25	+14.38	147.10
Oct. 9	162.0	160.20	+3.83	−8.19	−0.45	+18.07	+13.26	146.94
22	161.0	159.21	+3.71	−8.16	−0.24	+15.91	+11.22	147.99
Nov. 30	150.0	148.33	+3.38	−8.03	+0.45	+ 5.10	+ 0.90	147.43
Dec. 3	149.0	147.34	+3.35	−8.02	+0.49	+ 4.10	− 0.08	147.42
4	149.0	147.34	+3.34	−8.01	+0.50	+ 3.75	− 0.42	147.76
9	147.5	145.85	+3.30	−7.99	+0.54	+ 2.02	− 2.13	147.98
30	140.5	138.93	+3.13	−7.92	+0.52	− 5.21	− 9.48	148.41
1729 Jan. 31	130.0	128.55	+2.84	−7.80	−0.01	−14.56	−19.53	148.08
Feb. 5	129.5	128.05	+2.80	−7.78	−0.11	−15.85	−20.94	148.99
8	128.5	127.06	+2.77	−7.77	−0.17	−16.45	−21.62	148.68
16	126.5	125.09	+2.71	−7.74	−0.32	−17.78	−23.13	148.22
17	126.5	125.09	+2.70	−7.74	−0.34	−17.93	−23.31	148.40
25	125.5	124.10	+2.63	−7.70	−0.45	−18.87	−24.39	148.49
Mar. 4	123.8	122.42	+2.57	−7.67	−0.52	−19.38	−25.00	147.42
8	125.4	124.00	+2.53	−7.66	−0.55	−19.55	−25.23	149.23
9	125.5	124.10	+2.52	−7.66	−0.56	−19.57	−25.27	149.37
10	125.2	123.81	+2.52	−7.65	−0.56	−19.59	−25.28	149.09
17	124.5	123.11	+2.46	−7.62	−0.57	−19.57	−25.30	148.41
28	125.3	123.91	+2.37	−7.58	−0.53	−18.99	−24.73	148.64
29	125.0	123.61	+2.36	−7.58	−0.52	−18.88	−24.62	148.23
31	126.5	125.09	+2.34	−7.57	−0.51	−18.68	−24.42	149.51
Apr. 4	127.5	126.08	+2.30	−7.56	−0.46	−18.23	−23.95	150.03
27	131.0	129.54	+2.11	−7.45	−0.08	−14.08	−19.50	149.04
June 9	143.7	142.10	+1.75	−7.26	+0.56	− 1.63	− 6.58	148.60
11	142.7	141.11	+1.73	−7.25	+0.56	− 0.95	− 5.91	147.02
13	142.6	141.01	+1.71	−7.24	+0.57	− 0.30	− 5.26	146.27
16	145.5	143.88	+1.69	−7.23	+0.57	+ 0.67	− 4.30	148.18
18	145.2	143.59	+1.67	−7.22	+0.58	+ 1.32	− 3.65	147.24
July 12	152.0	150.31	+1.46	−7.11	+0.40	+ 8.83	+ 3.58	146.73
21	155.6	153.86	+1.39	−7.07	+0.25	+11.33	+ 5.90	147.96
Aug. 7	159.2	157.43	+1.24	−6.98	−0.06	+15.35	+ 9.55	147.88
8	159.0	157.23	+1.23	−6.98	−0.08	+15.56	+ 9.73	147.50
9	160.0	158.22	+1.22	−6.97	−0.10	+15.76	+ 9.91	148.31
10	160.0	158.22	+1.21	−6.97	−0.12	+15.95	+10.07	148.15
16	159.7	157.92	+1.17	−6.93	−0.23	+17.01	+11.02	147.90
17	160.5	158.71	+1.16	−6.93	−0.24	+17.17	+11.16	147.56
21	163.0	161.18	+1.12	−6.91	−0.31	+17.77	+11.67	149.51

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1729 Aug. 23	161.0	159.21	+1″.10	−6″.90	−0″.35	+18″.04	+11″.89	147″.32
24	161.8	160.00	+1.09	−6.89	−0.36	+18.17	+12.01	147.99
28	162.0	160.20	+1.07	−6.87	−0.42	+18.62	+12.40	147.80
Sept. 3	161.7	159.90	+1.02	−6.84	−0.49	+19.15	+12.84	147.06
5	162.7	160.89	+1.00	−6.83	−0.51	+19.34	+13.00	147.89
8	162.8	160.99	+0.97	−6.82	−0.53	+19.45	+13.07	147.92
9	162.5	160.69	+0.96	−6.82	−0.54	+19.49	+13.09	147.60
13	162.3	160.50	+0.93	−6.79	−0.56	+19.59	+13.17	147.33
19	161.8	160.00	+0.88	−6.76	−0.57	+19.59	+13.14	146.86
20	162.7	160.89	+0.87	−6.76	−0.57	+19.57	+13.11	147.78
24	163.3	161.48	+0.83	−6.74	−0.56	+19.43	+12.96	148.52
Oct. 7	160.7	158.91	+0.73	−6.67	−0.48	+18.35	+11.93	146.98
15	160.8	159.01	+0.66	−6.63	−0.36	+17.26	+10.93	148.08
18	160.0	158.22	+0.63	−6.61	−0.32	+16.72	+10.42	147.80
21	159.0	157.23	+0.60	−6.60	−0.26	+16.16	+ 9.90	147.33
25	159.0	157.23	+0.56	−6.58	−0.19	+15.45	+ 9.24	147.99
29	158.0	156.24	+0.53	−6.56	−0.12	+14.47	+ 8.32	147.92
Dec. 7	145.5	143.88	+0.21	−6.33	+0.53	+ 2.80	− 2.79	146.67
14	144.5	142.89	+0.15	−6.29	+0.57	+ 0.39	− 5.18	148.07
1730 Mar. 21	123.8	122.42	−0.68	−5.71	−0.57	−19.45	−26.41	148.83
29	124.2	122.82	−0.75	−5.66	−0.52	−18.91	−25.84	148.66
June 17	145.5	143.88	−1.43	−5.15	+0.57	+ 0.91	− 5.10	148.98
18	145.0	143.39	−1.44	−5.14	+0.58	+ 1.24	− 4.76	148.15
Aug. 29	160.5	158.71	−2.05	−4.65	−0.43	+18.71	+11.58	147.13
Sept. 3	161.0	159.21	−2.09	−4.62	−0.49	+19.16	+11.96	147.25
4	161.5	159.70	−2.10	−4.61	−0.50	+19.23	+12.02	147.68
5	161.0	159.21	−2.11	−4.60	−0.51	+19.27	+12.05	147.16
6	161.0	159.21	−2.12	−4.60	−0.52	+19.33	+12.09	147.12
11	161.5	159.70	−2.17	−4.56	−0.55	+19.55	+12.27	147.43
29	162.2	160.40	−2.32	−4.44	−0.54	+19.15	+11.85	148.55
Oct. 1	161.4	159.61	−2.34	−4.43	−0.53	+19.00	+11.70	147.91
3	161.5	159.70	−2.35	−4.41	−0.51	+18.82	+11.55	148.15
Dec. 23	141.0	139.43	−3.04	−3.83	+0.56	− 2.66	− 8.97	148.40
26	139.7	138.14	−3.06	−3.81	+0.56	− 3.67	− 9.98	148.12
29	137.7	136.16	−3.09	−3.79	+0.53	− 4.71	−11.06	147.22
1731 Jan. 8	135.5	133.99	−3.18	−3.70	+0.41	− 8.40	−14.87	148.86
Feb. 17	124.3	122.92	−3.52	−2.98	−0.33	−17.86	−24.69	147.61
Aug. 15	158.5	156.73	−5.04	−2.06	−0.21	+16.67	+ 9.36	147.37
25	159.8	158.02	−5.13	−2.00	−0.38	+18.23	+10.72	147.30
28	160.0	158.22	−5.16	−1.98	−0.42	+18.57	+11.01	147.21
29	160.2	158.42	−5.17	−1.97	−0.43	+18.69	+11.12	147.30
31	161.0	159.21	−5.18	−1.96	−0.45	+18.88	+11.29	147.92
Sept. 2	160.0	158.22	−5.19	−1.95	−0.48	+19.05	+11.43	146.79
3	160.5	158.71	−5.20	−1.94	−0.49	+19.12	+11.49	147.22
14	161.0	159.21	−5.30	−1.87	−0.56	+19.61	+11.88	147.33
18	161.0	159.21	−5.34	−1.85	−0.57	+19.62	+11.86	147.35
21	161.0	159.21	−5.36	−1.83	−0.57	+19.57	+11.81	147.40
23	160.0	158.22	−5.38	−1.82	−0.57	+19.50	+11.73	146.49
24	160.0	158.22	−5.39	−1.81	−0.56	+19.46	+11.70	146.52
26	161.5	159.70	−5.41	−1.80	−0.56	+19.36	+11.59	148.11
30	159.7	157.92	−5.44	−1.77	−0.53	+19.10	+11.36	146.56
Oct. 1	159.5	157.72	−5.44	−1.76	−0.53	+19.04	+11.31	146.41

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1731 Oct. 3	160.0	158.22	− 5.″46	−1.″75	−0.″51	+18.″84	+11.″12	147.″10
6	159.0	157.23	− 5.49	−1.73	−0.48	+18.54	+10.84	146.39
15	158.3	156.54	− 5.56	−1.68	−0.35	+17.32	+ 9.72	146.82
Dec. 29	138.0	136.46	− 6.14	−1.27	+0.53	− 4.63	−11.51	147.97
1732 Sept. 13	159.8	158.02	− 8.42	+1.23	−0.56	+19.61	+11.86	146.16
14	160.5	158.71	− 8.43	+1.24	−0.56	+19.62	+11.87	146.84
15	160.5	158.71	− 8.44	+1.25	−0.56	+19.63	+11.88	146.83
16	161.0	159.21	− 8.45	+1.26	−0.57	+19.63	+11.87	147.34
17	160.0	158.22	− 8.46	+1.26	−0.57	+19.62	+11.85	146.37
1733 Feb. 2	126.8	125.39	− 9.62	+2.38	−0.05	−15.25	−22.54	147.93
Sept. 5	162.0	160.20	−11.44	+4.05	−0.51	+19.30	+11.40	148.80
6	162.5	160.69	−11.45	+4.06	−0.51	+19.32	+11.42	149.27
9	161.5	159.70	−11.48	+4.08	−0.54	+19.50	+11.56	148.14
1734 June 30	147.0	145.36	−13.98	+6.10	+0.53	+ 5.12	− 2.23	147.59
July 2	148.5	146.84	−14.00	+6.11	+0.51	+ 5.74	− 1.64	148.48
16	151.0	149.32	−14.12	+6.20	+0.33	+ 9.90	+ 2.31	147.01
21	153.0	151.30	−14.16	+6.23	+0.25	+11.28	+ 3.60	147.70
27	154.5	152.77	−14.21	+6.27	+0.14	+12.81	+ 5.01	147.76
Aug. 9	158.2	156.44	−14.32	+6.34	−0.10	+15.73	+ 7.65	148.79
11	157.5	155.74	−14.34	+6.35	−0.14	+16.11	+ 7.98	147.76
14	157.8	156.04	−14.36	+6.37	−0.19	+16.65	+ 8.47	147.57
17	159.0	157.23	−14.39	+6.39	−0.25	+17.14	+ 8.89	148.34
18	159.0	157.23	−14.40	+6.40	−0.27	+17.30	+ 9.03	148.20
19	160.0	158.22	−14.41	+6.40	−0.28	+17.47	+ 9.18	149.04
Dec. 22	141.2	139.63	−15.47	+7.09	+0.57	− 2.41	−10.22	149.85
1735 Jan. 2	136.0	134.49	−15.57	+7.16	+0.49	− 6.42	−14.34	148.83
3	135.3	133.80	−15.58	+7.16	+0.48	− 6.76	−14.70	148.50
7	134.5	133.00	−15.62	+7.18	+0.43	− 8.08	−16.09	149.09
Sept. 21	159.2	157.43	−17.79	+8.26	−0.57	+19.58	+ 9.48	147.95
24	158.8	157.03	−17.82	+8.27	−0.56	+19.47	+ 9.36	147.67
1736 Sept. 11	157.5	155.74	−20.82	+8.98	−0.55	+19.58	+ 7.19	148.55
19	157.8	156.04	−20.87	+8.98	−0.57	+19.61	+ 7.15	148.89
20	157.3	155.55	−20.88	+8.98	−0.57	+19.58	+ 7.11	148.44
1737 Jan. 15	126.7	125.29	−21.89	+9.00	+0.30	−10.61	−23.20	148.49
30	123.2	121.83	−22.01	+8.99	+0.01	−14.59	−27.60	149.43
Sept. 12	153.5	151.79	−23.93	+8.68	−0.55	+19.60	+ 3.80	147.99
13	154.0	152.28	−23.94	+8.68	−0.56	+19.62	+ 3.80	148.48
15	152.7	151.00	−23.96	+8.67	−0.56	+19.64	+ 3.79	147.21
17	154.0	152.28	−23.98	+8.67	−0.57	+19.64	+ 3.76	148.52
18	152.5	150.80	−23.98	+8.67	−0.57	+19.63	+ 3.75	147.05
19	154.0	152.28	−23.99	+8.67	−0.57	+19.62	+ 3.73	148.55
1738 Aug. 5	146.8	145.16	−26.70	+7.56	−0.03	+14.91	− 4.28	149.44
8	147.3	145.66	−26.73	+7.55	−0.08	+15.52	− 3.74	149.40
9	146.5	144.86	−26.74	+7.54	−0.10	+15.74	− 3.56	148.42
Sept. 24	150.5	148.82	−27.12	+7.34	−0.56	+19.47	− 0.87	149.69
1739 Feb. 4	112.5	111.24	−28.25	+6.61	−0.09	−15.58	−37.31	148.55
Aug. 30	144.3	142.70	−30.01	+5.33	−0.44	+18.81	− 6.31	149.01
31	144.2	142.60	−30.02	+5.32	−0.45	+18.90	− 6.25	148.85
Sept. 4	143.5	141.90	−30.05	+5.29	−0.50	+19.22	− 6.40	148.30
6	144.0	142.40	−30.07	+5.28	−0.52	+19.34	− 5.97	148.37
7	144.3	142.70	−30.08	+5.27	−0.53	+19.40	− 5.94	148.64
9	143.2	141.61	−30.10	+5.26	−0.54	+19.50	− 5.88	147.49

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1739 Sept. 10	143.3	141.71	−30″.11	+5″.25	−0″.54	+19″.54	− 5″.86	147″.57
11	143.8	142.20	−30.12	+5.24	−0.55	+19.57	− 5.86	148.06
13	143.6	142.00	−30.13	+5.23	−0.56	+19.62	− 5.84	147.84
1740 Jan. 31	108.2	107.00	−31.30	+4.26	+0.01	−14.65	−41.68	148.68
Aug. 20	136.5	134.98	−33.02	+2.66	−0.30	+17.70	−12.96	147.94
29	137.0	135.47	−33.10	+2.57	−0.43	+18.79	−12.17	147.64
30	137.0	135.47	−33.11	+2.56	−0.44	+18.88	−12.11	147.58
Sept. 1	138.2	136.66	−33.12	+2.54	−0.47	+19.05	−12.00	148.66
4	137.2	135.67	−33.15	+2.52	−0.50	+19.27	−11.86	147.53
5	138.0	136.46	−33.16	+2.51	−0.51	+19.33	−11.83	148.29
8	137.5	135.96	−33.18	+2.48	−0.53	+19.50	−11.73	147.69
9	137.7	136.16	−33.19	+2.47	−0.54	+19.53	−11.73	147.89
16	136.0	134.49	−33.26	+2.41	−0.57	+19.65	−11.77	146.26
19	137.0	135.47	−33.29	+2.38	−0.57	+19.62	−11.86	147.33
Oct. 1	135.0	133.50	−33.38	+2.27	−0.53	+18.98	−12.66	146.16
1741 Feb. 6	99.0	97.90	−34.46	+0.85	−0.13	−16.10	−49.84	147.74
Sept. 7	131.2	129.74	−36.26	−0.38	−0.53	+19.44	−17.73	147.47
8	131.2	129.74	−36.27	−0.39	−0.53	+19.48	−17.71	147.45
9	130.8	129.34	−36.28	−0.39	−0.54	+19.53	−17.68	147.02
11	132.0	130.53	−36.30	−0.41	−0.55	+19.59	−17.67	148.20
13	131.7	130.23	−36.31	−0.42	−0.56	+19.63	−17.66	147.89
17	131.0	129.54	−36.35	−0.45	−0.57	+19.65	−17.72	147.26
Oct. 2	130.0	128.55	−36.48	−0.57	−0.52	+18.91	−18.66	147.21
1742 Sept. 16	125.7	124.30	−39.44	−2.99	−0.57	+19.65	−23.35	147.65
17	125.3	123.91	−39.45	−3.00	−0.57	+19.65	−23.37	147.28
1743 Sept. 13	119.0	117.67	−42.50	−5.87	−0.56	+19.63	−29.30	146.97
14	119.5	118.16	−42.51	−5.88	−0.56	+19.64	−29.31	147.47
1745 Sept. 13	108.5	107.29	−48.68	−8.69	−0.56	+19.64	−38.29	145.58
16	108.8	107.59	−48.71	−8.69	−0.57	+19.66	−38.31	145.90
1746 Sept. 26	107.2	106.01	−51.86	−8.71	−0.56	+19.38	−41.75	147.76
30	107.5	106.30	−51.90	−8.71	−0.53	+19.12	−42.02	148.32
Oct. 1	106.0	104.82	−51.91	−8.70	−0.53	+19.04	−42.10	146.92
1747 Sept. 12	104.5	103.33	−52.83	−7.80	−0.55	+19.64	−41.53	144.86
13	105.5	104.32	−52.84	−7.80	−0.56	+19.64	−41.56	145.88

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Assuming $P = 43° 50' - 90''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 Feb. 27	66.8	66.05	+4″.51	−8″.67	−0″.45	−18″.19	−22″.60	88″.65
Mar. 29	66.3	65.06	+4.30	−8.62	−0.53	−18.46	−23.31	88.87
31	66.7	65.95	+4.29	−8.61	−0.52	−18.23	−23.07	89.02
Apr. 2	66.8	66.05	+4.27	−8.61	−0.49	−18.04	−22.87	88.92
4	67.1	66.35	+4.26	−8.61	−0.47	−17.83	−22.65	89.00
17	69.8	69.02	+4.17	−8.58	−0.28	−15.97	−20.66	89.68
May 16	77.3	76.44	+3.97	−8.52	+0.26	− 9.28	−13.57	90.01
17	77.0	76.14	+3.96	−8.52	+0.27	− 9.00	−13.29	89.43

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 May 21	78.7	77.82	+3.″93	−8.″51	+0.″34	− 7.″72	−11.″96	89.″78
June 15	86.0	85.04	+3.78	−8.45	+0.57	− 0.21	− 4.31	89.35
16	85.5	84.54	+3.77	−8.45	+0.57	+ 0.11	− 4.00	88.54
26	91.5	90.48	+3.70	−8.42	+0.56	+ 3.24	− 0.92	91.40
July 2	91.5	90.48	+3.67	−8.41	+0.52	+ 5.10	+ 0.88	89.60
3	92.5	91.47	+3.66	−8.41	+0.51	+ 5.42	+ 1.18	90.29
11	95.0	93.94	+3.60	−8.38	+0.42	+ 7.76	+ 3.40	90.54
14	96.5	95.42	+3.58	−8.38	+0.38	+ 8.61	+ 4.19	91.23
24	97.6	96.51	+3.51	−8.36	+0.21	+11.29	+ 6.65	89.86
29	99.0	97.90	+3.47	−8.34	+0.13	+12.53	+ 7.79	90.11
Aug. 6	101.3	100.17	+3.43	−8.32	−0.03	+14.30	+ 9.38	90.79
8	101.5	100.37	+3.42	−8.31	−0.07	+14.72	+ 9.76	90.61
12	102.5	101.35	+3.39	−8.30	−0.14	+15.49	+10.44	90.91
13	103.0	101.85	+3.38	−8.30	−0.16	+15.67	+10.59	91.26
16	104.0	102.84	+3.36	−8.29	−0.21	+16.18	+11.04	91.80
21	105.0	103.83	+3.33	−8.27	−0.30	+16.96	+11.72	92.11
23	106.0	104.82	+3.32	−8.27	−0.33	+17.23	+11.95	92.87
26	104.5	103.33	+3.29	−8.26	−0.38	+17.61	+12.26	91.07
29	107.0	105.81	+3.27	−8.25	−0.42	+17.95	+12.55	93.26
Sept. 3	104.2	103.04	+3.25	−8.23	−0.48	+18.40	+12.94	90.10
5	104.0	102.84	+3.23	−8.23	−0.50	+18.55	+13.05	89.79
14	104.3	103.14	+3.17	−8.20	−0.56	+18.95	+13.36	89.78
1729 Mar. 8	66.5	65.75	+2.00	−7.56	−0.57	−18.85	−24.95	90.70
9	65.8	65.07	+1.99	−7.56	−0.55	−18.88	−25.00	90.07
17	66.5	65.75	+1.94	−7.53	−0.57	−18.97	−25.13	90.88
28	66.7	65.95	+1.87	−7.48	−0.53	−18.50	−24.64	90.59
29	68.0	67.24	+1.86	−7.48	−0.53	−18.43	−24.58	91.82
31	70.5	69.71	+1.85	−7.47	−0.52	−18.26	−24.40	94.11
Apr. 17	71.7	70.90	+1.66	−7.35	−0.10	−14.07	−19.86	90.76
June 16	86.5	85.53	+1.33	−7.11	+0.57	+ 0.03	− 5.18	90.71
18	88.5	87.51	+1.32	−7.10	+0.58	+ 0.65	− 4.55	92.06
July 11	97.5	96.41	+1.16	−7.00	+0.42	+ 7.69	+ 2.27	94.14
21	97.0	95.92	+1.09	−6.95	+0.27	+10.45	+ 4.86	91.06
Aug. 7	99.3	98.20	+0.99	−6.86	−0.05	+14.46	+ 8.54	89.66
8	99.5	98.39	+0.98	−6.85	−0.07	+14.67	+ 8.73	89.66
9	100.5	99.38	+0.98	−6.85	−0.09	+14.87	+ 8.91	90.47
10	100.5	99.38	+0.97	−6.84	−0.10	+15.06	+ 9.09	90.29
16	102.0	100.86	+0.92	−6.81	−0.22	+16.14	+10.03	90.83
17	102.5	101.35	+0.91	−6.81	−0.23	+16.30	+10.17	91.18
21	101.2	100.08	+0.89	−6.79	−0.30	+16.90	+10.70	89.38
23	103.5	102.34	+0.88	−6.77	−0.33	+17.26	+11.04	91.30
24	102.5	101.35	+0.87	−6.77	−0.35	+17.38	+11.13	90.22
28	102.0	100.86	+0.85	−6.75	−0.41	+17.82	+11.51	89.35
30	102.7	101.55	+0.84	−6.74	−0.43	+18.03	+11.70	89.85
Sept. 8	102.5	101.35	+0.77	−6.69	−0.53	+18.72	+12.27	89.08
9	100.7	99.58	+0.76	−6.68	−0.53	+18.77	+12.32	87.26
1730 Mar. 21	66.0	65.26	−0.53	−5.55	−0.58	−18.89	−25.55	90.81
27	65.7	64.97	−0.57	−5.52	−0.54	−18.59	−25.22	90.19
29	67.0	66.25	−0.59	−5.50	−0.53	−18.45	−25.07	91.32
June 17	86.0	85.04	−1.12	−4.99	+0.57	+ 0.26	− 5.28	90.32
18	85.2	84.25	−1.13	−4.98	+0.58	+ 0.57	− 4.96	89.21
Aug. 29	102.0	100.86	−1.61	−4.48	−0.42	+17.90	+11.39	89.47

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1730 Sept. 3	102.5	101.35	−1.″64	−4.″44	−0.″48	+18.″36	+11.″80	89.″55
4	102.5	101.35	−1.65	−4.43	−0.49	+18.44	+11.87	89.48
6	103.2	102.05	−1.66	−4.42	−0.51	+18.58	+11.99	90.06
11	103.5	102.34	−1.70	−4.39	−0.54	+18.85	+12.22	90.12

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Assuming $P = 33^\circ\,0' + 133''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 Apr. 17	111.0	109.76	+1.″52	−8.″47	−0.″32	−17.″38	−24.″65	133.″41
May 17	117.5	116.19	+1.45	−8.39	+0.24	−10.39	−17.09	133.28
June 15	128.0	126.57	+1.38	−8.31	+0.56	− 1.26	− 7.63	134.20
16	129.7	128.25	+1.38	−8.31	+0.57	− 0.93	− 7.29	135.54
26	128.0	126.57	+1.35	−8.28	+0.56	+ 2.36	− 4.01	130.58
July 2	131.0	129.54	+1.33	−8.27	+0.53	+ 4.33	− 2.08	131.62
3	137.5	135.96	+1.33	−8.27	+0.52	+ 4.65	− 1.77	137.73
11	135.0	133.50	+1.32	−8.24	+0.45	+ 7.18	+ 0.71	132.79
14	136.5	134.98	+1.31	−8.23	+0.41	+ 8.10	+ 1.59	133.39
16	137.0	135.47	+1.30	−8.22	+0.38	+ 8.69	+ 2.15	133.32
24	137.7	136.16	+1.28	−8.20	+0.25	+11.01	+ 4.34	131.82
29	141.0	139.43	+1.27	−8.19	+0.16	+12.36	+ 5.60	133.83
Aug. 6	140.8	139.23	+1.25	−8.16	+0.01	+14.31	+ 7.41	131.82
8	142.0	140.42	+1.25	−8.15	−0.03	+14.79	+ 7.86	132.56
12	144.5	142.89	+1.24	−8.14	−0.10	+15.65	+ 8.65	134.24
13	143.2	141.61	+1.24	−8.14	−0.12	+15.85	+ 8.83	132.78
16	143.5	141.90	+1.23	−8.12	−0.18	+16.43	+ 9.36	132.54
21	141.5	139.92	+1.21	−8.11	−0.26	+17.34	+10.18	129.74
23	143.0	141.41	+1.21	−8.10	−0.30	+17.65	+10.46	130.95
26	146.0	144.37	+1.20	−8.09	−0.35	+18.10	+10.86	133.51
28	146.0	144.37	+1.20	−8.08	−0.38	+18.38	+11.12	133.25
29	144.5	142.89	+1.19	−8.08	−0.39	+18.51	+11.23	131.66
Sept. 2	147.0	145.36	+1.19	−8.07	−0.44	+18.97	+11.65	133.71
5	146.2	144.57	+1.18	−8.06	−0.48	+19.26	+11.90	132.67
1729 Mar. 17	108.0	106.80	+0.71	−7.28	−0.57	−19.97	−27.11	133.91
28	108.2	107.00	+0.68	−7.23	−0.55	−19.68	−26.78	133.78
29	106.7	105.51	+0.68	−7.22	−0.54	−19.62	−26.70	132.21
31	110.0	108.77	+0.67	−7.21	−0.53	−19.47	−26.54	135.31
Apr. 27	111.7	110.45	+0.60	−7.08	−0.14	−15.37	−21.99	132.44
June 16	127.3	125.89	+0.48	−6.83	+0.57	− 1.01	− 6.79	132.68
18	127.0	125.59	+0.48	−6.82	+0.58	− 0.35	− 6.11	131.70
July 11	133.0	131.52	+0.43	−6.70	+0.45	+ 7.11	+ 1.29	130.23
21	139.2	137.65	+0.40	−6.65	+0.30	+10.09	+ 4.14	133.51
Aug. 7	143.3	141.71	+0.36	−6.56	−0.01	+14.49	+ 8.28	133.43
8	142.5	140.91	+0.36	−6.55	−0.03	+14.73	+ 8.51	132.40
9	142.5	140.91	+0.36	−6.54	−0.05	+14.96	+ 8.73	132.18
16	144.3	142.70	+0.33	−6.50	−0.18	+16.39	+10.04	132.66
17	145.5	143.88	+0.33	−6.50	−0.20	+16.57	+10.20	133.68
21	146.0	144.37	+0.32	−6.48	−0.27	+17.29	+10.86	133.51

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1729 Aug. 24	146.0	144.37	+0.″31	−6.″46	−0.″32	+17.″77	+11.″30	133.″07
28	147.8	146.15	+0.31	−6.44	−0.38	+18.35	+11.84	134.31
30	146.3	144.67	+0.30	−6.43	−0.41	+18.60	+12.06	132.61
Sept. 8	148.5	146.84	+0.28	−6.38	−0.51	+19.49	+12.88	133.96
9	149.0	147.34	+0.28	−6.37	−0.52	+19.56	+12.95	134.39
11	146.2	144.57	+0.27	−6.36	−0.53	+19.68	+13.06	131.51
1730 Mar. 21	110.5	109.26	−0.20	−5.17	−0.58	−19.95	−25.90	135.16
27	110.5	109.26	−0.21	−5.13	−0.55	−19.74	−25.63	134.89
29	111.0	109.76	−0.22	−5.12	−0.54	−19.63	−25.51	135.27
June 17	130.5	129.04	−0.41	−4.58	+0.57	− 0.76	− 5.18	134.22
18	130.0	128.55	−0.41	−4.57	+0.58	− 0.43	− 4.83	133.38
Aug. 29	147.0	145.36	−0.58	−4.06	−0.39	+18.45	+13.42	131.94
Sept. 3	149.7	148.03	−0.59	−4.02	−0.46	+19.02	+13.95	134.08
4	149.5	147.83	−0.59	−4.01	−0.47	+19.12	+14.05	133.78
5	147.8	146.15	−0.61	−4.00	−0.48	+19.21	+14.12	132.03
11	147.5	145.85	−0.62	−3.96	−0.53	+19.67	+14.56	131.29

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Assuming $P = 38^{\circ}\,25' + 82''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Aug. 30	72.6	71.79	+2.″11	−8.″83	−0.″40	+18.″13	+11.″01	82.″80
Sept. 1	71.5	70.70	+2.11	−8.83	−0.43	+18.36	+11.21	81.91
2	70.0	69.22	+2.10	−8.83	−0.44	+18.47	+11.30	80.52
3	71.4	70.61	+2.10	−8.83	−0.45	+18.58	+11.40	82.01
5	71.6	70.80	+2.10	−8.83	−0.48	+18.78	+11.57	82.37
10	71.8	71.00	+2.08	−8.82	−0.52	+19.18	+11.92	82.92
11	70.7	69.91	+2.08	−8.82	−0.53	+19.24	+11.97	81.88
13	71.7	70.90	+2.07	−8.82	−0.54	+19.35	+12.06	82.96
14	71.3	70.51	+2.07	−8.82	−0.55	+19.40	+12.10	82.61
15	71.7	70.90	+2.07	−8.82	−0.56	+19.44	+12.13	83.03
18	70.9	70.11	+2.07	−8.82	−0.57	+19.54	+12.22	82.33
20	70.0	69.22	+2.06	−8.81	−0.57	+19.57	+12.25	81.47
30	71.3	70.51	+2.04	−8.81	−0.55	+19.39	+12.07	82.58
Oct. 4	71.5	70.70	+2.03	−8.80	−0.53	+19.16	+11.86	82.56
5	71.6	70.80	+2.03	−8.80	−0.52	+19.09	+11.80	82.60
8	71.8	71.00	+2.02	−8.80	−0.50	+18.83	+11.55	82.55
10	71.8	71.00	+2.02	−8.80	−0.47	+18.64	+11.38	82.38
19	72.5	71.69	+1.99	−8.79	−0.35	+17.48	+10.33	82.02
24	74.0	73.18	+1.98	−8.79	−0.26	+16.66	+ 9.59	82.77
31	75.2	74.36	+1.96	−8.78	−0.13	+15.28	+ 8.33	82.69
Nov. 1	76.4	75.55	+1.96	−8.77	−0.11	+15.08	+ 8.16	83.71
25	81.5	80.59	+1.90	−8.74	+0.34	+ 8.65	+ 2.15	82.74
28	82.5	81.58	+1.89	−8.73	+0.39	+ 7.70	+ 1.25	82.83
Dec. 16	88.5	87.51	+1.85	−8.70	+0.57	+ 1.70	− 4.58	82.93
17	88.3	87.32	+1.85	−8.70	+0.57	+ 1.33	− 4.95	82.37
26	91.8	90.78	+1.82	−8.69	+0.57	− 1.77	− 8.07	82.71

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 Jan. 7	97.0	95.92	+1.″78	−8.″67	+0.″47	− 6.″19	−12.″61	83.″31
8	96.2	95.13	+1.78	−8.67	+0.46	− 6.52	−12.95	82.18
9	96.7	95.62	+1.77	−8.67	+0.45	− 6.84	−13.29	82.33
27	103.5	102.34	+1.73	−8.64	+0.15	−12.25	−19.01	83.33
Feb. 4	104.9	103.73	+1.72	−8.62	−0.02	−14.27	−21.19	82.54
5	104.0	102.84	+1.71	−8.62	−0.04	−14.51	−21.46	81.38
21	109.0	107.70	+1.68	−8.59	−0.33	−17.95	−25.19	82.60
27	110.5	109.26	+1.66	−8.58	−0.42	−18.39	−25.73	83.53
Mar. 18	110.5	109.26	+1.61	−8.54	−0.57	−19.58	−27.08	82.18
29	109.8	108.58	+1.58	−8.52	−0.54	−19.24	−26.72	81.86
31	109.5	108.28	+1.58	−8.51	−0.53	−19.10	−26.56	81.72
Apr. 2	109.7	108.48	+1.57	−8.51	−0.51	−18.94	−26.39	82.07
4	108.2	107.00	+1.57	−8.50	−0.49	−18.77	−26.19	80.81
17	107.0	105.81	+1.54	−8.47	−0.32	−17.08	−24.33	81.48
May 17	99.5	98.39	+1.47	−8.39	+0.24	−10.31	−16.99	81.40
21	99.0	97.90	+1.46	−8.37	+0.30	− 9.16	−15.77	82.13
June 15	89.8	88.80	+1.39	−8.30	+0.56	− 1.39	− 7.74	81.06
16	89.6	88.60	+1.39	−8.30	+0.57	− 1.07	− 7.41	81.19
26	88.5	87.51	+1.36	−8.27	+0.56	+ 2.18	− 4.17	83.34
July 2	84.5	83.55	+1.35	−8.25	+0.53	+ 4.11	− 2.26	81.29
3	84.6	83.65	+1.35	−8.25	+0.52	+ 4.41	− 1.97	81.68
6	83.0	82.08	+1.34	−8.24	+0.50	+ 5.36	− 1.04	81.04
11	83.0	82.08	+1.32	−8.23	+0.45	+ 6.91	+ 0.45	82.53
14	82.5	81.58	+1.32	−8.22	+0.40	+ 7.81	+ 1.31	82.89
24	77.8	76.93	+1.29	−8.19	+0.25	+10.68	+ 4.03	80.96
29	77.5	76.63	+1.28	−8.16	+0.17	+12.01	+ 5.30	81.93
Aug. 6	77.0	76.14	+1.26	−8.14	+0.02	+13.95	+ 7.09	83.23
8	75.0	74.16	+1.26	−8.13	−0.02	+14.41	+ 7.52	81.68
13	75.0	74.16	+1.24	−8.11	−0.12	+15.46	+ 8.47	82.63
16	74.0	73.18	+1.24	−8.10	−0.18	+16.04	+ 9.00	82.13
23	74.0	73.18	+1.22	−8.07	−0.30	+17.25	+10.10	83.28
25	73.0	72.19	+1.22	−8.06	−0.33	+17.55	+10.38	82.57
26	72.0	71.20	+1.21	−8.06	−0.35	+17.69	+10.49	81.69
29	72.3	71.50	+1.21	−8.05	−0.39	+18.09	+10.86	82.36
Sept. 2	72.3	71.50	+1.19	−8.03	−0.44	+18.56	+11.28	82.78
3	72.0	71.20	+1.19	−8.03	−0.45	+18.66	+11.37	82.57
5	71.2	70.41	+1.19	−8.02	−0.48	+18.84	+11.53	81.94
9	71.0	70.21	+1.17	−8.01	−0.51	+19.17	+11.82	82.03
12	71.0	70.21	+1.17	−8.00	−0.53	+19.34	+11.98	82.19
14	71.0	70.21	+1.17	−7.99	−0.55	+19.43	+12.06	82.27
15	71.0	70.21	+1.16	−7.99	−0.56	+19.47	+12.08	82.29
17	71.0	70.21	+1.16	−7.98	−0.57	+19.53	+12.14	82.35
20	70.5	69.71	+1.15	−7.97	−0.57	+19.57	+12.18	81.89
21	71.0	70.21	+1.15	−7.96	−0.57	+19.58	+12.20	82.41
22	70.5	69.71	+1.15	−7.96	−0.57	+19.57	+12.19	81.90
26	71.3	70.51	+1.14	−7.94	−0.57	+19.51	+12.14	82.65
27	70.7	69.91	+1.14	−7.94	−0.57	+19.48	+12.11	82.02
Oct. 8	71.5	70.70	+1.11	−7.90	−0.50	+18.76	+11.47	82.17
9	72.0	71.20	+1.11	−7.90	−0.48	+18.67	+11.40	82.60
27	75.3	74.46	+1.06	−7.82	−0.21	+15.95	+ 8.98	83.44
29	75.0	74.16	+1.06	−7.82	−0.17	+15.54	+ 8.61	82.77
Nov. 2	75.0	74.16	+1.05	−7.80	−0.09	+14.68	+ 7.84	82.00

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Obaervation	Obaervation: Division of Microm.	Obaervation: Secoods	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1728 Nov. 30	83.0	82.08	+0.″98	−7.″66	+0.″42	+ 6.″82	+ 0.″56	82.″64
Dec. 4	83.5	82.57	+0.97	−7.65	+0.47	+ 5.55	− 0.66	81.91
9	86.5	85.53	+0.95	−7.62	+0.52	+ 3.82	− 2.33	83.20
10	86.3	85.34	+0.95	−7.62	+0.53	+ 3.49	− 2.65	82.69
28	92.2	91.18	+0.91	−7.53	+0.56	− 2.75	− 8.81	82.37
30	92.5	91.47	+0.90	−7.52	+0.55	− 3.43	− 9.50	81.97
31	93.3	92.26	+0.90	−7.52	+0.54	− 3.78	− 9.86	82.40
1729 Jan. 1	93.0	91.16	+0.90	−7.51	+0.53	− 4.11	−10.19	81.77
Feb. 5	104.0	102.84	+0.81	−7.43	−0.05	−14.68	−21.35	81.49
8	105.0	103.83	+0.80	−7.42	−0.11	−15.34	−22.07	81.76
16	107.3	106.11	+0.79	−7.38	−0.26	−16.90	−23.75	82.36
17	107.5	106.30	+0.79	−7.38	−0.28	−17.06	−23.93	82.37
18	107.1	105.91	+0.78	−7.38	−0.30	−17.23	−24.13	81.78
24	108.5	107.29	+0.76	−7.35	−0.39	−18.11	−25.09	82.20
25	109.0	107.79	+0.76	−7.35	−0.41	−18.24	−25.24	82.55
Mar. 4	110.0	108.77	+0.74	−7.31	−0.49	−18.98	−26.04	82.73
8	108.5	107.29	+0.74	−7.29	−0.53	−19.27	−26.35	80.94
9	108.5	107.29	+0.73	−7.29	−0.54	−19.32	−26.42	80.87
10	108.5	107.29	+0.73	−7.28	−0.55	−19.38	−26.48	80.81
12	110.0	108.77	+0.73	−7.28	−0.56	−19.46	−26.57	82.20
16	108.8	107.59	+0.71	−7.26	−0.57	−19.56	−26.68	80.91
17	109.5	108.28	+0.71	−7.26	−0.57	−19.57	−26.69	81.59
28	108.7	107.49	+0.68	−7.20	−0.55	−19.31	−26.38	81.11
29	110.0	108.77	+0.68	−7.20	−0.54	−19.26	−26.32	82.45
31	108.0	106.80	+0.68	−7.19	−0.53	−19.12	−26.14	80.66
Apr. 27	105.5	104.32	+0.61	−7.06	−0.14	−15.28	−21.87	82.45
June 13	91.0	89.99	+0.50	−6.82	+0.55	− 2.12	− 7.89	82.10
16	89.5	88.50	+0.49	−6.80	+0.57	− 1.15	− 6.88	81.62
18	89.0	88.01	+0.48	−6.79	+0.57	− 0.51	− 6.25	81.76
20	90.0	89.00	+0.48	−6.78	+0.58	+ 0.16	− 5.56	83.44
July 1	84.0	83.06	+0.45	−6.73	+0.54	+ 3.71	− 2.03	81.03
5	84.5	83.55	+0.44	−6.71	+0.51	+ 4.97	− 0.79	82.76
12	81.5	80.59	+0.42	−6.67	+0.43	+ 7.14	+ 1.32	81.91
21	79.0	78.12	+0.40	−6.62	+0.31	+ 9.77	+ 3.86	81.98
Aug. 7	74.8	73.97	+0.36	−6.53	0.00	+14.11	+ 7.94	81.91
8	75.0	74.16	+0.36	−6.52	−0.02	+14.35	+ 8.17	82.33
9	75.5	74.65	+0.36	−6.52	−0.04	+14.57	+ 8.37	83.02
16	75.5	74.65	+0.34	−6.48	−0.18	+15.99	+ 9.67	84.32
17	71.5	70.70	+0.33	−6.47	−0.19	+16.18	+ 9.85	80.55
21	71.5	70.70	+0.32	−6.45	−0.26	+16.89	+10.50	81.20
23	72.0	71.20	+0.32	−6.44	−0.30	+17.21	+10.79	81.99
24	72.2	71.40	+0.32	−6.43	−0.31	+17.36	+10.94	82.34
28	72.0	71.20	+0.31	−6.41	−0.38	+17.94	+11.46	82.66
30	70.7	69.91	+0.30	−6.40	−0.40	+18.19	+11.69	81.60
Sept. 3	69.0	68.23	+0.29	−6.38	−0.45	+18.63	+12.08	80.32
5	70.5	69.71	+0.29	−6.36	−0.48	+18.82	+12.27	81.98
8	70.0	69.22	+0.28	−6.35	−0.51	+19.08	+12.50	81.72
9	70.2	69.42	+0.28	−6.34	−0.52	+19.15	+12.57	81.99
11	70.5	69.71	+0.27	−6.33	−0.53	+19.27	+12.68	82.39
13	70.5	69.71	+0.27	−6.32	−0.54	+19.38	+12.79	82.50
19	70.2	69.42	+0.26	−6.28	−0.57	+19.56	+12.97	82.39
20	70.2	69.42	+0.25	−6.27	−0.57	+19.57	+12.98	82.40

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1729 Sept. 24	69.6	68.82	+0.″25	−6.″26	−0.″57	+19.″56	+12.″98	81.″80
29	69.8	69.02	+0.23	−6.23	−0.56	+19.41	+12.85	81.87
Oct. 15	71.5	70.70	+0.19	−6.14	−0.41	+18.36	+12.00	82.70
29	73.0	72.19	+0.16	−6.06	−0.17	+15.60	+ 9.53	81.72
Nov. 4	75.0	74.16	+0.14	−6.02	−0.06	+14.28	+ 8.34	82.50
Dec. 2	82.5	81.58	+0.07	−5.85	+0.44	+ 6.26	+ 0.92	82.50
7	84.0	83.06	+0.06	−5.82	+0.50	+ 4.58	− 0.68	82.38
9	85.0	84.05	+0.05	−5.80	+0.52	+ 3.92	− 1.31	82.74
11	85.3	84.35	+0.05	−5.79	+0.53	+ 3.24	− 1.97	82.38
14	86.0	85.04	+0.04	−5.77	+0.56	+ 2.22	− 2.95	82.09
17	87.5	86.52	+0.04	−5.75	+0.57	+ 1.16	− 3.98	82.54
21	88.5	87.51	+0.02	−5.73	+0.57	− 0.22	− 5.36	82.15
26	90.5	89.49	+0.01	−5.70	+0.57	− 1.97	− 7.09	82.40
1730 Mar. 21	107.3	106.11	−0.20	−5.14	−0.58	−19.56	−25.48	80.63
27	108.0	106.80	−0.21	−5.10	−0.55	−19.46	−25.32	81.48
29	107.2	106.01	−0.22	−5.09	−0.54	−19.27	−25.12	80.89
June 17	87.7	86.72	−0.41	−4.54	+0.57	− 0.91	− 5.29	81.43
18	87.5	86.52	−0.41	−4.53	+0.57	− 0.58	− 4.95	81.57
Aug. 28	70.0	69.22	−0.59	−4.03	−0.38	+17.89	+12.89	82.11
29	70.3	69.52	−0.59	−4.02	−0.39	+18.03	+13.03	82.55
Sept. 3	69.0	68.23	−0.61	−3.98	−0.45	+18.61	+13.57	81.80
4	69.2	68.43	−0.61	−3.97	−0.47	+18.71	+13.66	82.09
5	69.3	68.53	−0.61	−3.97	−0.48	+18.80	+13.74	82.27
6	69.0	68.23	−0.62	−3.96	−0.49	+18.89	+13.82	82.05
11	69.0	68.23	−0.63	−3.92	−0.53	+19.27	+14.19	82.42
12	69.0	68.23	−0.63	−3.91	−0.54	+19.32	+14.24	82.47
18	69.0	68.23	−0.64	−3.87	−0.57	+19.54	+14.46	82.64
19	69.0	68.23	−0.64	−3.87	−0.57	+19.55	+14.47	82.70
20	68.0	67.24	−0.65	−3.86	−0.57	+19.57	+14.49	81.73
27	68.7	67.93	−0.66	−3.81	−0.57	+19.49	+14.45	82.38
29	67.8	67.04	−0.67	−3.79	−0.56	+19.42	+14.40	81.44
Oct. 1	68.6	67.93	−0.67	−3.78	−0.55	+19.33	+14.33	82.26
3	67.9	67.14	−0.68	−3.76	−0.53	+19.31	+14.24	81.38
Dec. 20	86.6	85.63	−0.87	−3.71	+0.57	+ 0.21	− 3.26	82.37
23	87.8	86.82	−0.88	−3.15	+0.57	− 0.83	− 4.29	82.53
26	88.5	87.51	−0.89	−3.13	+0.57	− 1.86	− 5.31	82.20
1731 Jan. 4	91.5	90.48	−0.91	−3.05	+0.49	− 5.29	− 8.76	81.72
15	95.0	93.94	−0.94	−2.96	+0.34	− 8.87	−12.43	81.51
Feb. 14	105.0	103.83	−1.01	−2.70	−0.23	−16.45	−20.39	83.44
17	105.0	103.83	−1.02	−2.68	−0.28	−16.98	−20.96	82.87
18	105.7	104.52	−1.02	−2.67	−0.30	−17.15	−21.14	83.38
Aug. 25	69.3	68.53	−1.48	−1.26	−0.33	+17.44	+14.37	82.90
28	68.5	67.73	−1.49	−1.24	−0.38	+17.86	+14.75	82.48
29	68.5	67.73	−1.49	−1.23	−0.39	+18.00	+14.89	82.62
31	67.0	66.25	−1.50	−1.22	−0.42	+18.25	+15.11	81.36
Sept. 1	67.7	66.94	−1.50	−1.21	−0.43	+18.37	+15.23	82.17
2	67.8	67.04	−1.51	−1.21	−0.44	+18.48	+15.32	82.36
3	67.8	67.04	−1.51	−1.20	−0.45	+18.58	+15.42	82.46
14	67.2	66.45	−1.53	−1.13	−0.55	+19.40	+16.19	82.64
18	67.0	66.25	−1.54	−1.11	−0.57	+19.54	+16.32	82.57
21	66.5	65.75	−1.55	−1.09	−0.57	+19.58	+16.37	82.12
23	67.0	66.25	−1.55	−1.07	−0.57	+19.57	+16.38	82.63

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1731 Sept. 24	67.0	66.25	−1″.55	−1″.07	−0″.57	+19″.56	+16″.37	82″.62
26	66.2	65.46	−1.56	−1.05	−0.57	+19.53	+16.35	81.81
30	67.8	67.04	−1.57	−1.03	−0.55	+19.39	+16.24	83.28
Oct. 1	66.8	66.05	−1.57	−1.02	−0.55	+19.34	+16.24	82.25
3	67.3	66.55	−1.58	−1.01	−0.53	+19.22	+16.10	82.65
6	67.5	66.74	−1.59	−0.99	−0.52	+19.01	+15.91	82.65
13	68.7	67.93	−1.60	−0.95	−0.43	+18.31	+15.33	83.26
15	69.0	68.23	−1.61	−0.93	−0.41	+18.05	+15.10	83.33
Dec. 29	88.0	87.02	−1.80	−0.52	+0.55	− 2.83	− 4.60	82.42
1732 Jan. 11	92.0	90.98	−1.83	−0.52	+0.42	− 7.51	− 9.17	81.81
20	95.5	94.43	−1.85	−0.16	+0.28	−10.26	−11.99	82.44
Sept. 13	65.7	64.97	−2.43	+1.99	−0.54	+19.39	+18.41	83.38
14	64.7	63.98	−2.43	+2.00	−0.55	+19.43	+18.45	82.43
15	66.0	65.26	−2.44	+2.01	−0.56	+19.47	+18.48	83.74
16	64.5	63.78	−2.44	+2.02	−0.56	+19.50	+18.52	82.30
17	65.0	64.28	−2.44	+2.03	−0.57	+19.53	+18.55	82.83
1733 Feb. 1	96.0	94.93	−2.77	+3.12	+0.03	−13.74	−13.36	81.57
2	96.7	95.62	−2.77	+3.12	+0.01	−13.99	−13.63	81.99
Sept. 5	61.0	60.32	−3.30	+4.73	−0.48	+18.82	+19.77	80.09
6	62.0	61.31	−3.31	+4.74	−0.49	+18.91	+19.85	81.16
9	61.5	60.81	−3.31	+4.76	−0.52	+19.15	+20.08	80.89
1734 June 30	75.0	74.16	−4.02	+6.67	+0.55	+ 3.32	+ 6.52	80.68
July 2	74.0	73.18	−4.03	+6.68	+0.53	+ 3.95	+ 7.13	80.31
16	72.5	71.64	−4.06	+6.76	+0.38	+ 8.26	+11.34	83.03
21	69.3	68.53	−4.08	+6.79	+0.31	+ 9.71	+12.73	81.26
27	68.0	67.24	−4.09	+6.82	+0.20	+11.34	+14.27	81.51
Aug. 9	64.5	63.78	−4.12	+6.89	−0.04	+14.52	+17.25	81.03
14	65.2	64.48	−4.14	+6.92	−0.14	+15.56	+18.20	82.68
18	62.5	61.80	−4.15	+6.94	−0.21	+16.32	+18.90	80.70
19	62.7	62.00	−4.15	+6.95	−0.23	+16.51	+19.08	81.08
22	63.0	62.30	−4.16	+6.97	−0.28	+17.01	+19.54	81.84
Dec. 22	79.5	78.61	−4.46	+7.57	+0.57	− 0.49	+ 3.19	81.80
1735 Jan. 2	83.3	82.38	−4.49	+7.64	+0.51	− 4.62	− 0.96	81.42
3	84.3	83.36	−4.49	+7.64	+0.50	− 4.96	− 1.31	82.05
7	86.0	85.04	−4.50	+7.66	+0.46	− 6.25	− 2.63	82.41
Sept. 20	61.0	60.42	−5.13	+8.58	−0.57	+19.57	+22.45	82.87
21	60.7	60.02	−5.13	+8.58	−0.57	+19.58	+22.46	82.48
24	59.5	58.83	−5.13	+8.59	−0.57	+19.56	+22.45	81.28
1736 Aug. 11	59.8	59.13	−6.00	+9.05	−0.53	+19.29	+21.81	80.94
Sept. 19	59.5	58.83	−6.01	+9.05	−0.57	+19.56	+22.03	80.86
20	60.0	59.33	−6.01	+9.05	−0.57	+19.57	+22.04	81.37
1737 Jan. 14	86.5	85.53	−6.30	+8.98	+0.36	− 8.69	− 5.65	79.88
15	87.5	86.52	−6.30	+8.98	+0.35	− 9.00	− 5.97	80.55
30	92.8	91.77	−6.33	+8.96	+0.07	−13.25	−10.55	81.22
Sept. 12	61.5	60.81	−6.89	+8.49	−0.54	+19.33	+20.39	81.20
13	60.3	59.63	−6.89	+8.49	−0.54	+19.38	+20.44	80.07
17	61.5	60.81	−6.90	+8.48	−0.57	+19.52	+20.53	81.34
18	61.8	61.11	−6.90	+8.48	−0.57	+19.55	+20.56	81.67
19	60.8	60.12	−6.90	+8.47	−0.57	+19.56	+20.56	80.68
21	62.3	61.61	−6.91	+8.46	−0.57	+19.58	+20.56	82.17
23	81.7	80.79	−7.14	+8.16	+0.57	− 0.95	+ 0.64	81.43
1738 Aug. 5	68.0	67.24	−7.68	+7.17	+0.03	+13.61	+13.13	80.37

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Sum	Aberration	Reduced to 1730
1738 Aug. 8	66.2	65.46	− 7.″69	+7.″16	−0.″02	+14.″29	+13.″74	79.″20
9	65.7	64.97	− 7.69	+7.15	−0.04	+14.52	+13.94	78.91
Sept. 20	62.3	61.61	− 7.80	+6.95	−0.57	+19.57	+18.15	79.76
23	61.7	61.01	− 7.80	+6.94	−0.57	+19.57	+18.14	79.15
24	61.8	61.11	− 7.80	+6.94	−0.57	+19.56	+18.13	79.24
25	63.7	62.99	− 7.81	+6.93	−0.57	+19.54	+18.09	81.98
26	63.3	62.60	− 7.81	+6.93	−0.57	+19.52	+18.07	80.67
27	63.2	62.50	− 7.81	+6.92	−0.57	+19.49	+18.03	80.53
1739 Jan. 10	91.5	90.48	− 8.06	+6.26	+0.46	− 7.25	− 8.59	81.89
25	96.0	94.93	− 8.09	+6.17	+0.17	−11.78	−13.53	81.40
26	96.2	95.13	− 8.09	+6.16	+0.15	−12.05	−13.83	81.30
Feb. 4	98.5	97.40	− 8.12	+6.10	−0.03	−14.34	−16.39	81.01
Aug. 29	68.0	67.24	− 8.62	+4.73	−0.39	+18.00	+13.76	81.00
30	68.0	67.24	− 8.63	+4.72	−0.40	+18.13	+13.82	81.06
31	69.0	68.23	− 8.63	+4.72	−0.42	+18.25	+13.92	82.15
Sept. 4	67.9	67.14	− 8.64	+4.68	−0.47	+18.68	+14.25	81.39
6	67.7	66.94	− 8.65	+4.67	−0.49	+18.87	+14.40	81.34
7	67.5	66.74	− 8.65	+4.66	−0.50	+18.95	+14.46	81.20
9	67.2	66.45	− 8.65	+4.65	−0.52	+19.11	+14.59	81.04
10	68.0	67.24	− 8.66	+4.64	−0.52	+19.18	+14.64	81.88
11	67.8	67.04	− 8.66	+4.63	−0.53	+19.24	+14.68	81.72
13	67.3	66.55	− 8.66	+4.62	−0.54	+19.38	+14.80	81.35
1740 Jan. 31	100.7	99.58	− 8.98	+3.79	+0.07	−13.31	−18.63	80.95
Feb. 6	104.3	103.14	− 9.00	+3.54	−0.05	−14.75	−20.24	82.90
Aug. 20	73.5	72.68	− 9.48	+1.92	−0.25	+16.77	+ 8.96	81.64
29	72.2	71.40	− 9.50	+1.85	−0.39	+18.11	+10.07	81.47
30	72.2	71.40	− 9.50	+1.84	−0.40	+18.24	+10.18	81.58
Sept. 1	71.2	70.41	− 9.51	+1.81	−0.43	+18.45	+10.32	80.73
4	72.2	71.40	− 9.52	+1.79	−0.47	+18.75	+10.55	81.95
5	71.0	70.21	− 9.52	+1.78	−0.48	+18.85	+10.63	80.84
8	71.5	70.70	− 9.53	+1.75	−0.51	+19.10	+10.81	81.51
9	72.4	71.60	− 9.53	+1.74	−0.52	+19.17	+10.86	82.46
10	71.8	71.00	− 9.54	+1.73	−0.52	+19.23	+10.90	81.90
16	71.6	70.80	− 9.55	+1.68	−0.56	+19.50	+11.07	81.87
19	72.2	71.40	− 9.55	+1.65	−0.57	+19.56	+11.09	82.49
Oct. 1	72.5	71.69	− 9.58	+1.53	−0.55	+19.29	+10.69	82.38
1741 Feb. 6	107.7	106.50	− 9.88	+0.09	−0.05	−14.91	−24.75	81.75
Sept. 7	76.3	75.45	−10.41	−1.14	−0.50	+19.00	+ 6.95	82.40
8	76.4	75.55	−10.41	−1.15	−0.51	+19.08	+ 7.01	82.56
9	76.2	75.35	−10.41	−1.16	−0.52	+19.15	+ 7.06	82.41
11	75.7	74.85	−10.42	−1.17	−0.53	+19.27	+ 7.15	82.00
12	76.7	75.84	−10.42	−1.18	−0.54	+19.33	+ 7.19	83.03
13	76.2	75.35	−10.42	−1.19	−0.54	+19.38	+ 7.23	82.58
17	75.5	74.65	−10.43	−1.22	−0.57	+19.53	+ 7.31	81.96
Oct. 1	76.4	75.55	−10.46	−1.32	−0.55	+19.30	+ 6.97	82.52
2	76.7	75.84	−10.46	−1.33	−0.54	+19.25	+ 6.92	82.76
4	76.6	75.74	−10.47	−1.34	−0.53	+19.12	+ 6.78	82.52
1742 Sept. 16	77.5	76.63	−11.30	−4.10	−0.56	+19.48	+ 3.52	80.15
1743 Sept. 13	82.5	81.58	−12.17	−6.45	−0.54	+19.35	+ 0.19	81.77
1745 Sept. 13	87.8	86.82	−13.91	−8.84	−0.54	+19.38	− 3.91	82.91
14	87.8	86.82	−13.91	−8.84	−0.55	+19.42	− 3.88	82.94
16	87.3	86.33	−13.92	−8.84	−0.56	+19.50	− 3.82	82.51
1746 Sept. 26	87.8	86.82	−14.82	−8.59	−0.57	+19.51	− 4.37	82.45

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1746 Oct. 1	87.0	86.03	−14″.83	−8″.58	−0″.55	+19″.32	−4″.64	81″.39
1747 Sept. 11	87.0	86.03	−15.66	−7.46	−0.53	+19.24	−4.41	81.62
12	87.2	86.23	−15.66	−7.46	−0.54	+19.30	−4.36	81.67
13	87.0	86.03	−15.66	−7.45	−0.54	+19.35	−4.30	81.70

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Assuming $P = 32° 20' - 81''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1727 Sept. 2	33.0	32.63	−46″.32	+0″.68	+0″.34	− 1″.86	−47″.16	79″.79
15	38.4	37.98	−45.61	+0.76	+0.14	+ 2.03	−42.68	80.66
19	40.7	40.24	−45.39	+0.78	+0.07	+ 3.23	−41.31	81.55
20	42.0	41.53	−45.34	+0.79	+0.05	+ 3.53	−40.97	82.50
26	43.5	43.01	−45.02	+0.82	−0.06	+ 5.28	−38.98	81.99
27	44.3	43.81	−44.96	+0.83	−0.08	+ 5.56	−38.65	82.46
30	43.8	43.31	−44.80	+0.85	−0.13	+ 6.44	−37.64	80.94
Oct. 8	45.7	45.19	−44.36	+0.89	−0.26	+ 8.64	−35.03	80.22
10	47.4	46.88	−44.25	+0.91	−0.29	+ 9.17	−34.46	81.34
19	49.7	49.14	−43.76	+0.96	−0.41	+11.41	−31.80	80.94
31	53.3	52.71	−43.12	+1.03	−0.51	+13.97	−28.63	81.34
Nov. 6	55.0	54.39	−42.79	+1.07	−0.53	+15.03	−27.22	81.61
25	57.8	57.16	−41.87	+1.18	−0.43	+17.28	−23.84	81.09
Dec. 3	60.0	59.33	−41.33	+1.23	−0.32	+17.67	−22.75	82.08
16	59.6	58.93	−40.62	+1.30	−0.12	+17.54	−21.90	80.83
17	60.8	60.12	−40.57	+1.31	−0.10	+17.49	−21.87	81.99
23	60.3	59.63	−40.24	+1.34	+0.02	+17.09	−21.79	81.42
24	60.7	60.02	−40.19	+1.35	+0.04	+17.00	−21.80	81.82
25	60.2	59.53	−40.13	+1.36	+0.06	+16.90	−21.81	81.34
1728 Jan. 1	60.2	59.53	−39.70	+1.40	+0.20	+15.98	−22.12	81.65
9	59.2	58.54	−39.21	+1.45	+0.32	+14.76	−22.68	81.22
14	58.0	57.35	−39.00	+1.48	+0.39	+13.81	−23.32	80.67
27	55.4	54.79	−38.29	+1.55	+0.50	+10.91	−25.33	80.12
31	55.0	54.39	−38.07	+1.59	+0.53	+ 9.89	−26.06	80.45
Feb. 13	53.5	52.90	−37.37	+1.65	+0.50	+ 6.29	−28.93	81.83
14	51.6	51.02	−37.32	+1.66	+0.49	+ 6.00	−29.17	80.19
16	51.0	50.43	−37.26	+1.67	+0.48	+ 5.42	−29.69	80.12
Apr. 3	40.2	39.75	−34.66	+1.95	−0.25	− 8.58	−41.54	81.29
18	37.3	36.89	−33.85	+2.03	−0.44	−12.21	−44.47	81.36
29	35.4	35.01	−33.24	+2.09	−0.52	−14.36	−46.03	81.40
May 19	31.0	30.65	−32.16	+2.21	−0.47	−17.00	−47.42	78.07
June 18	36.5	36.09	−30.53	+2.37	−0.05	−17.34	−45.55	81.64
19	37.0	36.59	−30.48	+2.38	−0.03	−17.27	−45.40	81.99
28	38.2	37.78	−29.99	+2.43	+0.12	−16.49	−43.93	81.71
July 4	37.3	36.89	−29.66	+2.46	+0.22	−15.76	−42.74	79.63
5	38.0	37.58	−29.61	+2.47	+0.24	−15.62	−42.52	80.10
9	39.5	39.06	−29.40	+2.49	+0.30	−14.93	−41.54	80.60
16	40.0	39.55	−29.02	+2.53	+0.39	−13.74	−39.84	79.39
Aug. 7	46.5	45.98	−27.82	+2.65	+0.53	− 8.96	−33.60	79.58

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Solar Nutation	Lunar Nutation	Aberration	Sum	Reduced to 1730
1728 Aug. 9	47.0	46.48	−27″.71	+2″.67	+0″.53	− 8″.43	−32″.94	79″.42
Sept. 24	63.7	62.99	−25.22	+2.92	−0.02	+ 4.91	−17.41	80.40
29	66.0	65.26	−24.95	+2.94	−0.11	+ 6.36	−15.76	81.03
Oct. 1	66.2	65.46	−24.84	+2.95	−0.15	+ 6.92	−15.12	80.58
29	75.5	74.65	−23.32	+3.11	−0.50	+13.73	− 6.98	81.63
30	75.7	74.85	−23.27	+3.11	−0.50	+13.92	− 6.74	81.59
Nov. 11	78.0	77.13	−22.60	+3.17	−0.52	+15.90	− 4.05	81.18
28	81.5	80.59	−21.70	+3.26	−0.39	+17.51	− 1.32	81.91
Dec. 3	83.5	82.57	−21.43	+3.29	−0.32	+17.69	− 0.77	83.34
4	82.7	81.78	−21.38	+3.29	−0.31	+17.71	− 0.69	82.47
10	83.0	82.08	−21.04	+3.33	−0.22	+17.71	− 0.22	82.30
11	83.5	82.57	−20.98	+3.33	−0.20	+17.69	− 0.16	82.73
12	83.0	82.08	−20.93	+3.34	−0.18	+17.66	− 0.11	82.19
15	82.3	82.38	−20.77	+3.35	−0.13	+17.55	0.00	82.38
20	83.0	82.08	−20.50	+3.38	−0.04	+17.26	+ 0.10	81.98
22	83.5	82.57	−20.39	+3.39	0.00	+17.11	+ 0.11	82.46
24	82.5	81.58	−20.29	+3.40	+0.04	+16.99	+ 0.14	81.44
27	83.0	82.08	−20.13	+3.41	+0.10	+16.63	+ 0.01	82.07
1729 Jan. 1	83.3	82.38	−19.80	+3.45	+0.21	+15.88	− 0.26	82.12
Feb. 2	78.0	77.13	−18.06	+3.61	+0.53	+ 9.17	− 4.75	81.88
Mar. 9	68.7	67.93	−16.17	+3.79	+0.19	− 1.21	−13.40	81.33
28	63.5	62.79	−15.14	+3.89	−0.15	− 6.86	−18.26	81.05
29	64.5	63.78	−15.09	+3.89	−0.17	− 7.13	−18.50	82.28
Apr. 20	59.0	58.34	−13.88	+4.00	−0.47	−12.60	−22.95	81.29
June 14	58.5	57.84	−10.90	+4.26	−0.12	−17.56	−24.32	82.16
15	57.5	56.86	−10.85	+4.26	−0.10	−17.52	−24.21	81.07
16	57.4	56.77	−10.79	+4.27	−0.09	−17.47	−24.08	80.85
17	57.0	56.37	−10.74	+4.27	−0.07	−17.42	−23.96	80.33
18	57.7	57.06	−10.68	+4.28	−0.05	−17.36	−23.81	80.87
19	57.0	56.37	−10.63	+4.28	−0.03	−17.30	−23.68	80.05
22	59.0	58.34	−10.47	+4.30	+0.02	−17.08	−23.23	81.57
July 5	59.5	58.83	− 9.77	+4.36	+0.24	−15.66	−20.83	79.66
Oct. 21	94.0	92.95	− 3.91	+4.83	−0.43	+11.98	+12.47	80.48
25	95.0	93.94	− 3.69	+4.85	−0.47	+12.85	+13.54	80.40
26	97.0	95.92	− 3.64	+4.85	−0.48	+13.06	+13.79	82.13
28	97.8	96.71	− 3.53	+4.86	−0.50	+13.48	+14.31	82.40
Dec. 4	104.5	103.33	− 1.55	+5.00	−0.31	+17.70	+20.84	82.49
14	105.0	103.83	− 0.98	+5.05	−0.17	+17.64	+21.54	82.29
21	105.5	104.32	− 0.60	+5.08	−0.02	+17.23	+21.69	82.63
22	106.7	105.51	− 0.55	+5.08	0.00	+17.13	+21.84	83.67
1730 June 18	79.5	78.61	+ 9.16	+5.72	−0.05	−17.37	− 2.44	81.05
22	80.0	79.11	+ 9.37	+5.73	+0.02	−17.10	− 1.98	81.09
30	79.5	78.61	+ 9.81	+5.76	+0.16	−16.32	− 0.59	79.20
Dec. 20	128.0	126.57	+19.19	+6.22	−0.04	+17.30	+42.67	83.90
22	127.3	127.89	+19.30	+6.22	0.00	+17.15	+42.67	85.22
23	127.8	126.38	+19.35	+6.22	+0.02	+17.06	+42.65	83.73
1731 Jan. 4	126.0	124.60	+20.06	+6.26	+0.26	+15.53	+42.11	82.49
1732 Jan. 19	145.0	143.39	+40.77	+6.68	+0.46	+12.78	+60.69	82.70
1733 Jan. 10	164.0	162.17	+60.13	+6.34	+0.36	+14.43	+81.26	80.91
12	164.2	162.37	+60.24	+6.34	+0.38	+14.05	+81.01	81.36
1734 June 23	158.5	156.73	+88.87	+4.57	+0.04	−17.02	+76.46	80.27
24	159.0	157.23	+88.92	+4.57	+0.05	−16.98	+76.56	80.67

TABLE V.—*Reduction of the Wanstead Observations.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1734 Dec. 22	204.0	201.73	+ 98.″74	+3.″67	0.″00	+17.″15	+119.″56	82.″17
1735 Jan. 2	203.5	201.23	+ 99.39	+3.61	+0.23	+15.82	+119.05	81.18
5	203.0	200.74	+ 99.55	+3.59	+0.28	+15.37	+118.79	81.95
1739 Jan. 2	276.5	273.42	+178.82	−4.84	+0.23	+15.82	+190.03	83.39
3	276.0	272.93	+178.87	−4.85	+0.24	+15.68	+189.94	82.99
8	273.8	270.75	+179.14	−4.87	+0.32	+14.89	+189.48	81.27
1740 Feb. 1	291.0	287.76	+200.35	−6.17	+0.53	+ 9.65	+204.36	83.40
1747 Mar. 10	433.5	428.67	+341.32	+2.64	+0.18	− 1.33	+342.81	85.86

Reduction of the Observations at Kew.

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Assuming $P = 38^{\circ}\,28' - 4''$.

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Snm	Reduced to 1730
1726 Jan. 1	3.58	3.56	+3.″62	−7.″99	+0.″53	− 4.″36	− 8.″20	4.″64
14	9.60	9.53	+3.58	−8.03	+0.36	− 8.60	−12.69	3.16
Feb. 24	18.67	18.52	+3.48	−8.16	−0.39	−18.08	−23.15	4.63
Mar. 17	21.06	20.90	+3.43	−8.23	−0.57	−19.55	−24.92	4.02
Apr. 1	20.24	20.08	+3.40	−8.28	−0.52	−19.07	−24.47	4.39
17	19.14	18.99	+3.35	−8.32	−0.32	−17·16	−22.45	3.46
18	18.55	18.41	+3.35	−8.33	−0.30	−17.00	−22.28	3.87
25	17.44	17.31	+3.33	−8.34	−0.18	−15.73	−20.92	3.61
May 5	14.90	14.79	+3.30	−8.37	+0.01	−13.55	−18.61	3.82
12	12.75	12.66	+3.29	−8.39	+0.14	−11.78	−16.74	4.08
June 3	6.73	6.67	+3.24	−8.44	+0.48	− 5.39	−10.11	3.44
7	4.65	4.62	+3.23	−8.45	+0.51	− 4.13	− 8.84	4.22
11	2.82	2.79	+3.22	−8.46	+0.55	− 2.84	− 7.53	4.74
12	2.89	2.87	+3.22	−8.47	+0.55	− 2.52	− 7.22	4.35
17	1.37	1.36	+3.21	−8.48	+0.57	− 0.91	− 5.61	4.25
18	0.70	0.70	+3.20	−8.48	+0.57	− 0.59	− 5.30	4.60
19	0.54	0.54	+3.20	−8.48	+0.58	− 0.26	− 4.96	4.42
22	0.92	0.91	+3.19	−8.49	+0.57	+ 0.72	− 4.01	3.10
23	0.23	0.23	+3.19	−8.49	+0.57	+ 0.04	− 3.69	3.92
24	0.75	0.75	+3.18	−8.50	+0.57	+ 1.36	− 3.39	4.14
25	1.85	1.83	+3.18	−8.50	+0.57	+ 1.68	− 3.07	4.90
27	2.07	2.05	+3.18	−8.50	+0.56	+ 2.33	− 2.43	4.48
30	3.22	3.20	+3.18	−8.51	+0.55	+ 3.30	− 1.48	4.68
July 6	4.78	4.75	+3.16	−8.53	+0.50	+ 5.19	+ 0.32	4.43
8	5.69	5.65	+3.15	−8.53	+0.48	+ 5.81	+ 0.91	4.74
10	5.82	5.77	+3.15	−8.54	+0.46	+ 6.45	+ 1.52	4.25
11	6.45	6.40	+3.14	−8.54	+0.45	+ 6.76	+ 1.81	4.59
12	5.87	5.82	+3.14	−8.54	+0.43	+ 7.06	+ 2.09	3.73
14	8.32	8.26	+3.13	−8.55	+0.41	+ 7.67	+ 2.66	5.60
17	8.30	8.24	+3.13	−8.55	+0.37	+ 8.54	+ 3.49	4.75

TABLE V.—*Reduction of the Observations at Kew.*

Day of Observation	Observation: Division of Microm.	Observation: Seconds	Precession	Lunar Nutation	Solar Nutation	Aberration	Sum	Reduced to 1730
1726 July 20	9.01	8.94	+3.″13	−8.″56	+0.″32	+ 9.″42	+ 4.″31	4.″63
21	9.14	9.07	+3.12	−8.56	+0.30	+ 9.71	+ 4.57	4.50
23	9.37	9.30	+3.12	−8.57	+0.27	+10.27	+ 5.09	4.21
29	10.69	10.61	+3.10	−8.58	+0.17	+11.86	+ 6.55	4.06
Aug. 16	13.85	13.74	+3.06	−8.61	−0.18	+15.94	+10.21	3.53
20	14.82	14.70	+3.04	−8.62	−0.25	+16.68	+10.85	3.85
Sept. 5	16.71	16.59	+3.01	−8.64	−0.48	+18.80	+12.69	3.90
8	17.95	17.81	+3.00	−8.65	−0.51	+19.06	+12.90	4.91
9	17.47	17.34	+2.99	−8.65	−0.52	+19.13	+12.95	4.39
13	17.27	17.14	+2.98	−8.66	−0.54	+19.37	+13.15	3.99
16	18.15	18.01	+2.98	−8.66	−0.56	+19.48	+13.24	4.77
18	16.80	16.67	+2.98	−8.67	−0.57	+19.54	+13.28	3.39
19	17.20	17.07	+2.97	−8.67	−0.57	+19.56	+13.29	3.78
20	17.39	17.26	+2.97	−8.67	−0.57	+19.57	+13.30	3.96
22	16.98	16.85	+2.96	−8.68	−0.57	+19.58	+13.29	3.56
25	17.47	17.34	+2.96	−8.68	−0.57	+19.54	+13.25	4.09
26	18.29	18.15	+2.96	−8.68	−0.57	+19.52	+13.23	4.92
29	17.70	17.57	+2.95	−8.69	−0.56	+19.42	+13.12	4.45
Oct. 6	16.73	16.61	+2.93	−8.70	−0.52	+18.99	+12.70	3.91
7	16.54	16.42	+2.93	−8.70	−0.51	+18.90	+12.62	3.80
8	16.27	16.15	+2.93	−8.70	−0.50	+18.81	+12.54	3.61
12	16.06	15.94	+2.91	−8.71	−0.45	+18.40	+12.15	3.79
28	13.30	13.20	+2.88	−8.74	−0.19	+15.85	+ 9.80	3.40
1727 Jan. 6	6.82	6.76	+2.69	−8.82	+0.47	− 5.91	−11.57	4.81
Mar. 2	22.62	21.85	+2.56	−8.86	−0.48	−18.84	−25.62	3.77
June 8	5.86	5.81	+2.32	−8.87	+0.53	− 3.99	−10.01	4.20
18	2.77	2.75	+2.29	−8.87	+0.57	− 0.59	− 6.60	3.85
20	2.06	2.04	+2.29	−8.87	+0.58	+ 0.08	− 5.92	3.88
23	1.64	1.63	+2.28	−8.87	+0.57	+ 1.04	− 4.98	3.35
July 30	10.99	10.90	+2.18	−8.86	+0.15	+12.07	+ 5.54	5.36
Aug. 11	11.90	11.81	+2.16	−8.85	−0.08	+14.89	+ 8.12	3.69
17	13.80	13.69	+2.14	−8.84	−0.19	+16.09	+ 9.20	4.49
Sept. 2	15.61	15.49	+2.10	−8.83	−0.44	+18.47	+11.30	4.19
15	15.98	15.85	+2.07	−8.82	−0.56	+19.44	+12.13	3.72

CORRECTIONS

Communicated by Dr. Busch after the Tables were printed.

P. 4.	1730 Apr. 10	18 Cam.	*for* 5.585	*r.* 5.885
13.	1730 Aug. 18	ι Herc.	16.458	16.455
14.	1733 Jan. 10	Red. to 1730	99.07	99.97
19.	1740 Feb. 2	Seconds	71.58	71.50
—	1728 July 9	Division	88.9	88.0
22.	1728 Mar. 29	Aberration	6.94	6.49
26.	18 Camelop.	———	$P=35°\ 0'$	$P=33°\ 0'$
32.	ε Ursæ maj.	———	$P=32°\ 20'$	$P=32°\ 30'$
—	1728 Dec. 27	Division	145.0	145.5
33.	1729 Aug. 1	Precession	8.62	8.26
34.	1747 Mar. 10	Sum	334.68	354.68
40.	1728 Jan. 27	Precession	6.10	6.20
45.	1729 Mar. 8	Sol. Nut.	0.57	0.54
48.	1728 Aug. 16	Red. to 1730	82.13	82.18
49.	1729 Jan. 1	Seconds	91.16	91.96
50.	1730 Dec. 20	Lun. Nut.	3.71	3.17
51.	1731 Oct. 1	Sum	16.24	16.20
—	1732 Jan. 11	Lun. Nut.	0.52	0.25
—	1734 July 16	Seconds	71.64	71.69
—	1736	Day of Obs.	Aug. 11.	Sept. 11
—	1737	———	Sept. 23	Dec. 23